NOTES ON THE ZOOLOGY OF FERNANDO NORONHA.

By H. N. RIDLEY, M.A., F.L.S.

[Read 7th June, 1888.]

(PLATE XXX.)

INTRODUCTION.

ON July 9th, 1887, the writer, with Mr. G. A. Ramage, of Edinburgh, started for Brazil to thoroughly explore the island of Fernando Noronha, lying in long. 32° 25′ 30″ W. and lat. 3° 50′ 10″ S., at a distance of 194 miles N.E. from Cape San Roque, coast of Brazil. On arriving at Pernambuco we were joined by the Rev. T. S. Lea, who came as a volunteer at his own expense. The cost of the expedition was defrayed by the Royal Society. After some delay at Pernambuco we embarked in the 'Nasmyth' steamship, trading to Liverpool, which was permitted to land us at the island, as the regular steamer trading between Pernambuco and Fernando Noronha was detained for a long time just as she was due to start. We arrived at our destination on August 14th, and remained there till September 24th, when we returned by the little Brazilian steamer to the mainland. We occupied ourselves in exploring, and in collecting plants, animals, and rock-specimens in all parts of the main islands, and visited also most of the other islets which were accessible; but owing to the absence of boats, which, on account of the convict-station, are not permitted on the island, we were unable to obtain much by dredging. The coral-reefs, however, at low tide afforded an abundant harvest of marine animals and plants.

Having in the 'Introduction' to my "Notes on the Botany of Fernando Noronha," printed in the 'Journal of the Linnean Society' (Botany, vol. xxvii. p. 1), given a detailed account of the group of islands of which this is the chief, as well as a history of its discovery by Amerigo Vespucci in 1503, it will be unnecessary to repeat what has there been stated. For the better understanding, however, of the special reports on Zoology which are now furnished, the following extracts from the Introduction referred to may be found useful.

Vespucci's description of the trees and innumerable birds is evidently correct, though most of the trees are destroyed, and the birds far less abundant than they were then. The lizards with two tails may have been a confusion of the very abundant and conspicuous Gecko with the *Amphisbæna*, which is often called the snake with two heads, or may have been suggested by finding an accidentally fork-tailed lizard, of which an example was obtained by our expedition. The "serpents" were doubtless the *Amphisbæna*. The large rats are much less easy to explain ; at present the only rats occurring on the island are *Mus rattus*, the common introduced black rat. It is impossible that the animals seen by Vespucci could have been this species, which could not at that time have been introduced. It is possible that there was formerly an indigenous rat-like mammal, which became exterminated by the black rat. We could find no tradition even of this big rat, and I fear it is quite extinct. The only hope of recovering its remains lies in an examination of the guano deposits of Rat Island, where its bones might be preserved.

The number of insects belonging to the orders which are well known as plant-fertilizers is surprisingly limited. A few small species of moths haunted at night the bushes of *Scoparia dulcis*, *Cassias*, &c. on the open spaces. A single species of butterfly was very abundant on Rat Island and the main island, but we never saw it visiting flowers.

The most important fertilizer was a small endemic hornet belonging to the genus *Polistes*, which gathered honey from the Leguminosæ and Cucurbitaceæ ; and three small black species of *Halictus* were caught in the flowers of the melons, *Momordica charantia*, *Oxalis Noronhæ*, and the mustard. The last plant was also haunted by *Temnoceras vesiculosus*, a pollen-eating Syrphid. The only other insects which could also be considered as possible fertilizers were *Tachytes inconspicuus*, n. sp., and *Monedula signata*, two sand-wasps, *Pompilus nesophila*, n. sp. (Hymenoptera), and *Psilopus metallifer* (a Dipteron), but none of these were seen at or near flowers. A small black beetle also was found in the flowers of an *Acacia* in the Governor's garden.

Though the number of species of insects was not large, the individuals, especially of the *Polistes* and *Halicti*, were very numerous, but at the same time they seemed out of all proportion to the immense number of flowers to be fertilized. It is very probable, however, that the majority of the Leguminosæ and some of the other plants were self-fertilized.

The lake on the main island contained a species of *Nitella* and an alga, an aquatic beetle and an Hemipteron, a new species of

Planorbis, and an Ostracod, the latter also occurring in all the streams of any size. The remaining streams and puddles produced dragonflies, a species of *Gammarus*, and a few algæ. One may compare this state of things with the freshwater fauna and flora of the other Atlantic islands. The absence of freshwater fish and amphibians is common to most small islands.

Just as with plants, a considerable number of animals have been introduced by man into the islands intentionally and by accident: such, for instance, as the Gecko (*Hemidactylus mabouia*), the American Cockroach (*Blatta americana*), and its curious parasite *Evania*, a spider, centipede, scorpion, rats and mice, and *Sitoplidus oryzæ*. These, though usually plentiful on the main island around the houses, are markedly absent from the smaller islets.

There are also many visitors which have arrived here by the aid of their wings, probably assisted by a suitable wind. They include a number of the peculiar terrestrial fauna, the land-birds and the insects. On looking over the lists of species taken here, we may note that the smaller birds are endemic, and a large proportion of the smaller insects. The small butterfly and almost all the moths are known from the mainland of South America, and the dragonflies are also widely distributed forms. All the winged fauna have a South-American facies, whether they are endemic or of wider distribution.

There are other creatures unprovided with means of traversing the ocean and not introduced by man. They include the *Amphisbæna*, Skink, the freshwater and terrestrial Mollusca, and perhaps some of the feebler-winged and apterous insects, the endemic ostracod, &c.

The *Planorbis*, *Gammarus*, and Ostracod, all supposed to be endemic species, may possibly have been brought over on the feet of Wading birds, which migrate here.

The presence of some others is more difficult to account for. The Mollusca are almost all peculiar, and the two that are not so are West-Indian. The *Amphisbæna* and Skink are endemic, and allied not to Brazilian but to West-Indian forms.

It is commonly said that reptiles and terrestrial mollusks find their way across the ocean by secreting themselves, or their eggs, on floating trees, which are drifted to islands; and though for several reasons this does not seem a satisfactory explanation of their distribution, yet the appearance of these animals here suggests this as the means by which they may have arrived. As

I have said, they are West-Indian in their affinities, and it is a striking fact that the marine fauna and flora are mainly West-Indian, while at least one of the plants (*Ipomœa Tuba*) whose seeds are known to be constantly drifted about at sea, and thus carried from place to place, is also only known from the West Indies. Another fact of interest in connection with this sea-travelling fauna, if I may use the expression, is that almost all the species noted occur on all the islands suitable for their existence. Thus, on Rat Island the *Bulimus Ridleyi*, the *Amphisbæna*, and Skink are common on St. Michael's Mount; the Skink is a large species, but the island, being a mere rocky peak, is unsuited for the *Amphisbæna*.

On Platform Island the lizard and several terrestrial Mollusca were found, while at the same time almost all the animals of more recent introduction were absent from these localities, just as is the case in the distribution of the plants. I believe, in fact, that this part of the fauna and flora was established on the island before it was broken up into the little archipelago of rocks and islets of which Fernando Noronha now consists *. Perhaps even this portion of the fauna and flora was introduced previously to the deposition of the basalt over the masses of phonolite which form as it were the skeleton outline of the island.

MAMMALIA.

No indigenous Mammals are to be found on these islands, and notwithstanding their proximity to the mainland, where Bats are abundant, no Bat of any species was observed by us, nor had the convicts ever seen any. Rats and Mice are exceedingly common. The Rat (*Mus rattus*) is here much paler than usual, and generally of a grey colour, while albinos are sometimes met with. It frequents the melon-fields and the tops of the cocoanut-trees, and is very destructive. The common House-Mouse, *M. musculus*, is even more abundant, and has suggested the name Rat Island (Ilha do Ratta), where it is as common as on the mainland. It swarms everywhere, and is so tame that it is often caught by the hand. I have seen one in the evening on the top of the inflorescence of a *Crotalaria*, apparently devouring the young seed-pods. Albinos are often seen. There being no birds or beasts of prey to keep these animals in check, and food being particularly abundant, they have increased enormously, and one of the employments of a convict is to capture a certain number of rats and mice once a month. At the monthly rat-hunt while we were on the island over 3900 were taken; but we were assured that, in the dry season, when the herbage which covered the greater part of the island was dried up and burnt, the mice were compelled to leave their holes, and many more were taken. The hunts are then undertaken weekly, and 20,000 have been caught in a day. The bodies are piled up in the square after evening service, and the numbers counted.

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* On reference to A. Vespucci's description of the place, it will be found that he speaks of it as one island, so the breaking-up into an archipelago can only have taken place within the last 400 years.

The Cat is said to have become feral on the main island; and on Rat Island and one or two of the other islands we saw a large black Cat which had escaped from an Italian vessel wrecked there, and which had run wild.

In Amerigo Vespucci's account of the island above quoted, he mentions "*Mures quam maximi.*" What these were we cannot now determine, but it is highly improbable that they were *Mus rattus*.

A species of Dolphin was constantly seen in San Antonio Bay and also off Rat Island. One was captured during our visit; its stomach contained many cuttlefish and prawns, the latter very similar to the common edible prawn of Pernambuco. Whales also passed within sight of the island on one occasion, but we did not see them.

AVES.

By R. Bowdler Sharpe, F.L.S., &c.,
Assistant in the Zoological Department, British Museum.

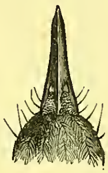
The birds of the island are not very numerous as regards species, and apparently there are only three indigenous Land-birds. The species of Sea-birds found by Mr. Ridley are precisely what one might have looked for, but it is a little remarkable that no Petrel was observed.

Fam. Vireonidæ.

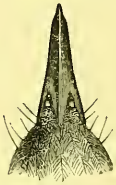
1. Vireo gracilirostris, sp. n.

V. similis *V. magistro*, et forsan proximus, sed forma graciliore, coloribus dilutioribus, facie laterali pallide flavicante, et rostro valde tenuiore et graciliore distinguendus. Long. tot. 5·7, culmin. 0·6, alæ 2·5, caudæ 2·25, tarsi 0·8.

Five specimens were procured, and after comparing them with the series of *Vireonidæ* in the British Museum, there is no doubt that the Fernando Noronha bird comes nearest to *V. magister*, of which species the Museum has now a large series from the islands of the Bay of Honduras, presented by Messrs. Salvin and Godman. The yellow face and the slender bill distinguish it at a glance from *V. magister*.



Bill of *V. gracilirostris.*



Bill of *V. magister.*

Fam. Tyrannidæ.

2. Elainea Ridleyana.

Elainea Ridleyana, *Sharpe, P. Z. S.* 1888, p. 107.

This species has been fully described by me (*l. c.*). Dr. Sclater (Cat. B. Brit. Mus. xiv. p. 139) does not consider it to be very different from *E. pagana*, but the size of the bill is very marked in the insular birds.

[This bird occurred only on the main island and Rat Island as far as we saw, and was very common in the gardens and in the woods. We saw only a few nests, and of these only one was finished and contained an egg, which was destroyed in an attempt to reach the nest. The egg was white with dark red spots. The nest, which was about three inches across, was made of the tendrils of Cucurbitaceæ and a few fine twigs, but lined thickly (and in fact almost entirely constructed in some cases) with the woolly down of the seeds of *Gonolobus micranthus.* It was placed often in the bare branches of a Burra or *Erythrina* tree, or in a Cashewnut-tree.—*H. N. R.*]

Fam. COLUMBIDÆ.

3. ZENAIDA MACULATA.

Zenaida maculata (*V.*), *Scl. & Salv. Nomencl. Av. Neotr.* p. 132 (1873).
Zenaida aurita, *Gray, List Gallinæ etc. Brit. Mus.* p. 14 (1855).
Zenaida noronha, *Gray, List Columbæ*, p. 47 (1856, descr. nullâ).

The bird from Fernando Noronha is merely a small race of the ordinary *Z. maculata* of the South-American continent, with a slightly shorter wing (5·1–5·4 inches) and tail (2·75–3·2); but as some Brazilian specimens are of the same dimensions, I do not see how the idea of a small insular race can be maintained.

[This little Dove is exceedingly common on all the islands where it can find food, and flies about from one island to the other, singly or in flocks of from 2 or 3 to 30. It is very tame, and even when fired at, or alarmed, usually goes but a short distance before settling. The nest is loose in texture, about 6 inches across, and built of small sticks of the *Spermacoce*, vetches, &c., and lined with roots. It is placed often in the bare branches of a Spondias or Burra, with no attempt at concealment. The eggs are two in number, white, blunt at both ends, and about 1¼ inch long. One bird shot off its nest proved to be a male. The convicts catch these birds both for eating and as pets, keeping them in wicker cages. They are fed on the seeds of Cassias and other Leguminosæ and Cucurbitaceæ, and probably the fig and other succulent fruits.—*H. N. R.*]

Fam. LARIDÆ.

4. ANOUS MELANOGENYS, *Gray*; *Sharpe, Phil. Trans.* vol. 168. p. 467 (1879).

Two adults and a young bird agreed perfectly with specimens obtained on St. Paul's Rock by the 'Challenger' Expedition and determined by Mr. Howard Saunders. The young bird is browner than the adult, and has the head sooty brown with some white on the forehead, eyebrows, and occipital region.

[This Noddy was very common on the island, and is called "Viuva preta." A specimen also flew on board the vessel as we were going to Pernambuco from Europe, about a day's steam from Fernando Noronha. The species nests in small colonies on the rocks in various spots, and also in trees in the Sapate. An egg was obtained from a nest on St. Michael's Mount; it was oval and blunt at both ends, $2\frac{1}{8}$ inches long, and about 1 inch through in the thickest part, chalky-white in colour, marked somewhat sparingly with underlying ash-grey, and overlying sienna. A living young bird from the nest was brought to me, but soon died.—*H. N. R.*]

5. GYGIS CANDIDA (*Gm.*); *Sharpe, t. c.* p. 465.

One adult and two young birds. The latter are white like the old birds, but have much smaller bills.

[This is a common bird in many parts of the island, nesting in trees, especially those of the Sapate, where there is a colony near that of the *Anous*. The bird is called "Viuva bianca."—*H. N. R.*]

Fam. PELECANIDÆ.

6. PHAETHON ÆTHEREUS (*L.*); *Scl. & Salv. Nomencl. Av.* p. 124.

Of this Tropic-bird two specimens were procured. It is common on the island, nesting on the Peak and on other rocks and cliffs. An egg was obtained on St. Michael's Mount. The birds were taken in snares by the convicts.

7. SULA LEUCOGASTRA.

An adult and a young bird. This species of Gannet, known as "Mbebu," is a common bird, nesting on cliffs on all the islands. The young are pure white.

Besides these birds we saw several of which no specimens were procured. *Tachypetes aquila* was abundant, nesting on St. Michael's Mount, and a small species of Albatros appeared several times round the island, but kept well out of gun-shot. Three species of Waders were seen:—One, a small Plover, of which we twice saw a flock at San Antonio Bay, and once or twice single birds flying along the coral-reefs; a bird resembling a Yellowshank, grey and white, of which a pair appeared at San Antonio at the end of our visit; and a single specimen of a Sandpiper, at the same spot and time. These wading birds were all very shy, in marked contrast to the endemic species, which suggested that they were migrants, and had come from the mainland, where they are more cautious at the sight of man. The last two species appeared on the same day towards the end of our visit, which confirmed the view that they were migrating.

REPTILIA.

By G. A. Boulenger, F.Z.S.,
Assistant in the Zoological Department, British Museum.

Only three species were found, viz. a Gecko (*Hemidactylus mabouia*, Mor.), a Skink (*Mabuia punctata*, Gray), and an *Amphisbæna*, described below.

The Gecko is of a widely-distributed species, ranging over the greater part of Tropical America and Africa.

The Skink was originally described from two specimens obtained on Fernando Noronha by H.M.S. 'Chanticleer,' but has since been recorded from Demerara. The specimens brought home by Mr. Ridley are 10 in number; two have 36 scales round the body, the others 38; in one specimen the frontonasal touches the rostral and in another the two shields form a narrow suture.

Amphisbæna Ridleyi, sp. n.

Under this name I propose to designate an *Amphisbæna* of which a specimen, stated to be from Porto Bello, West Indies *, presented by Capt. Austin, R.N., has been in the British Museum for nearly 50 years, and was referred by Gray, Strauch, and myself to *A. cæca*, D. & B. The same species has been found by Mr. Ridley on Fernando Noronha, and on re-examining the question I find that *A. cæca*, which occurs on various West-Indian Islands, but which was unrepresented in the British Museum when I published my Catalogue, must be regarded as distinct from the one with which I have now the pleasure of connecting Mr. Ridley's name.

16 specimens were collected by Mr. Ridley. One has 180 annuli on the body, one 181, one 182, three 183, two 185, two 186, one 187, one 188, one 189, one 190, one 195, and one 196; two have 18 annuli on the tail, eleven 19, and three 20. The "Porto-Bello" specimen has 189 annuli on the belly, and 19 on the tail. The number of annuli in five specimens of *A. cæca* (including the type) recorded by Strauch are respectively 212+15, 215+13, 227+18, 230+16, and 247+15. Duméril and Bibron give 226–329+18. A specimen from Porto Rico, which I owe to the

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* I am unable to find such a place either in the West Indies or Northern Brazil, but as the other of the two specimens presented by Capt. Austin as from "Porto Bello" belongs to a North-Brazilian species (*Amphisbæna vermicularis*), I entertain little doubt that both were obtained in Brazil.

kindness of Prof. Lütken, has 228+19. Considering that the number 247+15 given by Strauch is taken from a specimen in the Paris Museum, received from the Copenhagen Museum as from the island of St. Thomas, where only *A. fenestrata* (Cope) = *antillensis*, R. & L., is known to occur, as Prof. Lütken kindly informs me, it is clear to me that the specimen with 247 annuli belongs to *A. fenestrata*. The number of annuli would range, in *A. cæca* from 212 to 229, and in the present species from 180 to 196. According to Strauch, the length of the labial border of the first labial shield in *A. cæca* is about one half the length of that of the second; on Peters's figure of the type specimen, as well as in the Porto Rico specimen before me, it is about two thirds; in *A. Ridleyi* both are equal, or the former is a little longer. The snout is longer and somewhat more prominent, the tail thicker and more obtuse in *A. cæca* than in *A. Ridleyi*. The ventral segments of the two median rows are broader than long in the former species, the coloration of which is also different. I have therefore no hesitation in establishing a new species, which may be characterized as follows:—

Præmaxillary teeth 5 or 7, maxillaries 5–5, mandibulars 8–8. Snout obtusely pointed, slightly prominent. Tail thinner than the body, tapering. Rostral small, triangular; nasals forming a short suture; a pair of very large præfrontals, followed by a pair of much smaller frontals; eye hardly distinguishable through the ocular; a postocular, no subocular; three large upper labials, the second and third forming a suture with the ocular; lower border of second labial as long as or a little longer than that of the first, in contact with the second lower labial only; mental quadrangular, followed by a large seven-sided chin-shield, which is much longer than broad; three lower labials, second very large. 180 to 196 annuli on the body and 18 to 20 on the tail; the divisions of the annuli longer than broad, nearly equilateral on the middle of the belly, but nowhere broader than long; 16 to 18 divisions above, and 20 to 24 below the lateral line. Anal shields six or eight. Præanal pores four. Uniform brown or dark purplish brown above, pale brown inferiorly.

	millim.
Length to vent	250
Tail	24
Diameter of body	11

PISCES.

By G. A. Boulenger, F.Z.S.,
Assistant in the Zoological Department, British Museum.

The following marine species were obtained:—

Apogon imberbis, L., *Hæmulon chrysargyreum*, Günther, *Holocentrum longipinne*, C. & V., *Acantharus chirurgus*, Bl., *Dactylopterus volitans*, L., *Gobius soporator*, C. & V., *Salarias atlanticus*, C. & V., *Salarias vomerinus*, C. & V., *Clinus nuchipinnis*, Q. & G., *Clinus delalandii*, C. & V., *Gobiesox cephalus*, Lacép., *Pomacentrus leucostictus*, M. & T., *Glyphidodon saxatilis*, L., *Rhomboidichthys lunatus*, L., *Hemirhamphus unifasciatus*, Ranz., *Clupea humeralis*, C. & V., *Muræna pavonina*, Rich., *Muræna vicina*, Cast., *Muræna catenata*, Bl., and the new species described hereafter.

Julis noronhana, sp. n.

D. $\frac{8}{13}$. A. $\frac{2}{11}$. L. lat. 27. L. tr. $\frac{2\frac{1}{2}}{8}$.

Length of head one third of the total (without caudal), or a little less; depth of the body one fourth. Dorsal spines shorter than the rays. The length of the ventrals is two thirds or three fifths that of the pectoral, which is shorter than the head. Caudalis truncate. Upper half of body and caudal blackish, lower half yellowish white (in spirit); a whitish streak along each side of the back, just above the lateral line; dorsal, anal, pectoral, and ventral fins transparent, immaculate; a black spot between the first and third dorsal rays.

Several young specimens, the largest of which measures 60 millim.

The nearest ally of this species appears to be *J. lucasana*.

MOLLUSCA.

By Edgar A. Smith, F.Z.S.,
Assistant in the Zoological Department, British Museum.

The total number of Mollusca now known from Fernando Noronha is 80, of which 72 are marine forms, 7 terrestrial, and 1 freshwater.

Previous to this expedition no land or fluviatile species had been collected, and only 28 marine forms, all obtained by the 'Challenger,' have been recorded from this locality. Ten of these were also collected by Mr. Ridley, who has now added 44 additional species to the list.

The general facies of the marine Molluscan fauna is quite of a West-Indian type, as a perusal of the following pages will show; and it will also be observed that some of the species have a much wider and in some instances a very peculiar range. Of the land-shells two are known West-Indian species, one has been recorded from Brazil, Peru, and the island of Opara, and the remaining four, up to the present, appear to be peculiar to the island. One of these, however, *Bulimus Ramagei*, suggests a faunistic similarity to Brazil, as the section of *Bulimus* to which it belongs (*Tomigerus*), with one exception, occurs only in that country.

The single freshwater species suggests no relationship with any particular region, and might exist anywhere, similar forms being found both in the Old and New Worlds.

The following pages contain an account of the species obtained by Mr. H. N. Ridley and his colleagues, after which is appended a list of those recorded in the 'Challenger' Reports.

I. MARINE SPECIES.

1. Octopus rugosus, *Bosc.*

Hab. Mediterranean, Cape Verde Islands, West Indies, Rio Janeiro, &c.

This species is common in pools at low water. After being dried in the sun the arms are made into soup and eaten by the natives. Mr. Ridley, however, informs me that it is comparatively tasteless and of a soft gelatinous consistency.

2. Conus nebulosus, *Solander.*

Hab. West Indies: Barbados, Cuba, Martinique, Sta. Lucia.

The operculum of a shell 65 millim. in length is 17 long and only 4½ wide. It is thickened and carinate along the middle beneath, the muscular scar occupying more than half the entire length, and the nucleus is *not terminal* as stated by Messrs. Adams * and Tryon † in their respective Manuals of Conchology, but situated three millim. from the extremity. The growth at first is regularly concentric, but subsequently, to suit the narrowness of the aperture of the shell, the layers of increase are added at one end only, thus producing a long narrow operculum. MM. Cross and Marie[*] have also noticed, in respect of *C. imperialis*, *C. lividus*, and *C. rattus*, that the nucleus of the operculum is subapical, and doubtless it has a similar position in other species. The description of the operculum therefore as usually given in manuals and other works requires modification, and the nucleus should be termed *apical* or *subapical*.

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* 'Genera of Recent Mollusca,' vol. i. p. 246.

† 'Structural and Systematic Conchology,' vol. ii. p. 187.

3. CONUS DAUCUS, *Hwass*.

Hab. Barbados (*Mus. Cuming*); St. Domingo and Guadaloupe (*Küster*); Cuba and Martinique (*d'Orbigny*).

The single beach-rolled specimen has a very strongly marked double zone of brown spots upon the middle of the body-whorl. With this species I unite *C. mammillaris*, Green, *C. castus*, Reeve (not *C. castus* of Weinkauff), *C. archetypus*, Crosse, and *C. sanguinolentus* of Reeve.

C. Reevei, Kiener, placed by Weinkauff[†] in the synonymy of this species, is quite a distinct shell, which I regard as the same as *C. piperatus*, Dillwyn, not *C. piperatus*, Reeve, which, as stated by Weinkauff, is the same as *C. erythræensis* of Beck.

4. PLEUROTOMA (CRASSISPIRA) FUSCESCENS, *Gray*.

1843. Pleurotoma fuscescens, *Gray, Reeve, Con. Icon.* fig. 125.
1845. Pleurotoma nigrescens, *Gray, Reeve, l. c.* fig. 235.
1845. Pleurotoma paxillus, *Reeve*, fig. 285.
1850. Pleurotoma solida, *C. B. Adams, Contrib. Conch.* vol. i. p. 61.

Hab. Cuba (*d'Orbigny*); Jamaica (*C. B. Ad.* for *solida*); St. Vincent (*Reeve* for *nigrescens*).

Pl. nigrescens and *Pl. paxillus* differ from the typical form of the species in being very much smaller, *Pl. solida* being intermediate in size.

In his 'Manual of Conchology' (vol. vi. p. 193) Tryon states that *Pl. nigrescens* of C. B. Adams and *Pl. nigrescens* of Gray are the same species. Having types of the former received from Adams and Gray's types also for comparison, I can state that beyond a doubt they are distinct. *Pl. cuprea*, Reeve, is rather an unsatisfactory species at present, and I am rather inclined to believe that, as suggested by Tryon, it will prove to belong to this species also.

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[*] Journ. de Conch. 1874, pp. 333–359.

[†] Conch.-Cab. p. 312, no. 53.

5. MUREX (OCINEBRA) ALVEATUS, *Kiener*.

Hab. Panama (*Reeve, Kobelt, Sowerby*); West Indies (*Tryon*).

As suggested by Tryon *, I think there must be some mistake with regard to the locality "Panama" which has been assigned to this species first of all by Reeve and afterwards by others. I have never seen a specimen from that locality, and Mr. G. B. Sowerby informs me that he has frequently received it with collections from the West Indies, but never from the Pacific side of Central America. *M. erosus*, Broderip, *M. obeliscus*, A. Adams, *Triton Cantrainei*, Récluz, and probably *M. pauperculus*, C. B. Adams, are perfectly distinct from the present species and from one another. This is another example of Tryon's rash and indiscriminate "lumping" of species, which detracts so much from whatever value may be attached to his work.

6. PISANIA PUSIO (*Linné*).

Buccinum pusio, *Reeve, Con. Icon.* fig. 43.

Hab. Honduras and St. Thomas (*Coll. Cuming*); Sta. Lucia (*d'Orbigny* as *Purpura accincta*); Ascension I. (*Conry*).

The specimens from Fernando Noronha are rather small, and much more distinctly striated than certain examples from the West Indies.

7. PURPURA HÆMASTOMA, *Linné*.

The specimens obtained by Mr. Ridley constitute a well-marked variety of this well-known species, both as regards form and colour. They have the spire more elevated in proportion to the length of the aperture, and only the two uppermost of the four series of nodules on the body-whorl are distinct. The interior of the aperture is greenish blue, reddish near the labrum, which is bordered within with black-brown, upon which the fine orange or yellowish liræ are very distinct. The exterior of the shell is purplish black, streaked and spotted with greenish white. *P. hæmastoma* is known from the West Indies, West Africa, Mediterranean, Atlantic coasts of France, Spain, and Portugal.

8. COLUMBELLA MERCATORIA, *Linné*.

Hab. St. Vincent, Grenada, Nevis, Cuba, Martinique, and Sta. Lucia (*Brit. Mus.*).

With one exception the eleven Fernando Noronha shells are white, variegated with very dark brown or black. The single specimen, which differs from the rest, is of a pinkish tint sparingly marked with rich brown.

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* Man. Conch. vol. ii. p. 128.

9. Oliva literata, *Lamarck.*

Hab. West Indies, Gulf of Florida.

Two beach-rolled shells are all that were obtained. They have the transverse liræ on the inner lip extending over nearly the entire length of the columella.

10. Oliva (Olivella) nivea (*Gmelin*).

Hab. St. Vincent and other islands of the West Indies, Venezuela, and Brazil.

The shell named by Mr. Watson * *Oliva fulgida*, Reeve, from Fernando Noronha, does not belong to that species, but is a prettily coloured example of *O. nivea*. *O. fulgida* differs from Gmelin's species in the form of the columella and basal cauda. The columella of *O. nivea* is very peculiarly excavated, and this may be seen by looking as far within the aperture as possible. No such excavation occurs in *O. fulgida*, which also does not exhibit the numerous oblique folds or liræ on the columellar margin of the aperture which distinguish *O. nivea.*

A second species is quoted with doubt by Watson from Fernando Noronha, namely *O. pulchella*, Duclos. The two fragments referred to this species seem to me to bear little resemblance to Duclos's figure; but I have no hesitation in considering them specifically identical with the other specimen from the same spot which I refer to *O. nivea.*

11. Leucozonia cingulifera (*Lamarck*).

Hab. West Indies, Honduras, West Africa.

L. rudis, Reeve, is I consider quite distinct from this species. With this exception I agree with Tryon in his synonymy, and would even suggest the propriety of maintaining *L. leucozonalis*, Lamk., as a variety of this species.

The specimens from Fernando Noronha have stout rounded ribs, exhibit a distinct submedian white zone on the body-whorl, and have the aperture inclining to orange.

Tryon questions the West-African habitat of this species, but I am inclined to think it correct, as in the British Museum there are three specimens from that locality presented some years ago by a Mr. Lewis, together with other species which are undoubtedly West-African forms.

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* Gasteropoda of the 'Challenger' Exped. p. 224.

12. Leucozonia ocellata (*Gmelin*).

Hab. West Indies.

The specimens obtained offer no differences from ordinary West-Indian examples.

13. Latirus spadiceus (*Reeve*).

A single young shell seems to belong to this species.

L. concentricus, Reeve, *L. brevicauda*, Reeve, *L. gracilis*, Reeve, and the present species are very closely related.

14. Mitra barbadensis (*Gmelin*).

Hab. West Indies, Barbados, St. Vincent, &c.

M. tessellata, Kiener, which Reeve named *M. picta*, is perfectly distinct from the present species, and well known as a South-African shell. Tryon [*], not possessing or not having seen the species, at once concludes, from their general superficial resemblance, that it must be the same as *M. barbadensis*. The sculpture of the two is quite different. *M. barbadensis* is ornamented with raised spiral lines, whilst *M. picta* exhibits transverse punctured striæ. The character of the outer lip also is quite different.

15. Mitra (Pusia) ansulata, *Sowerby*.

Mitra ansulata, *Sowerby, Thes. Conch.* vol. iv. p. 26, pl. 373. fig. 474.

Mitra microzonias, *Reeve* (*non Lamarck*), *Con. Icon.* figs. 185, 202; *Sowerby, l. c.* fig. 635; *Kiener, Coq. Viv.* pl. 28. fig. 89 (probably); *Tryon, Man. Conch.* iv. p. 183, pl. 54. figs. 568, 569.

Hab. St. Thomas (*Mus. Cuming*); "West Indies, Mörch, Krebs, and Swift," *fide Tryon*.

This species is said to occur in Polynesia, but the British Museum Collection affords no evidence in proof of this statement.

The shell from Fernando Noronha belongs to that form of the species as figured by Reeve (fig. 185).

This is usually considered the *M. microzonias* of Lamarck, but if it be compared with the figure of that species in the 'Encyclopédie Méthodique' (pl. 374. fig. 8), it will be seen that it is a much more slender shell. The true *M. microzonias* has also been figured by Küster (Con.-Cab. pl. 17. figs. 12, 13), and Reeve also correctly depicts it (Con. Icon. pl. xxx. fig. 242 on left) under the name of *M. leucodesma*. Sowerby in his description of

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[*] Man. Conch. vol. iv. p. 118.

M. ansulata does not mention the presence of a second white zone on the body-whorl as represented in his figure, but this does occasionally exist. Tryon places this species in the synonymy of *M. dermestina*, Lamk., together with *M. cavea*, Reeve, *M. Adamsi*, Dohrn, *M. pulchella*, Reeve, *M. pisolina*, Lamk., *M. histrio*, Reeve, and *M. consanguinea*, Reeve. A more *ridiculous* instance than this of the "lumping" of species I have never seen. Tryon never could have examined examples of these various forms, for if he had he would not have united them; he must have been misled by the figures, or perhaps a little jealousy of non-possession may have influenced him.

Reeve's *M. leucodesma* he says is beyond a doubt the same as *M. pardalis*, Küster. From this it is, in my judgment, perfectly distinct; and the statement that "Reeve's figure of *M. pardalis* is a *Columbella*" is sheer guess-work. The shell figured by Reeve is in the British Museum, and not only is it a *Mitra*, but correctly identified by Reeve as *M. pardalis*, Küster. What right had Tryon to make such a statement in the face of Reeve's description, in which he properly characterizes the shell as *a Mitra with four plaits* on the columella? Numbers of similar absurdities occur throughout this work of Tryon's, which might have been avoided if more judgment had been used and the love of "lumping" been overcome.

16. MARGINELLA SAGITTATA, *Hinds*.

Hab. Bahamas to Brazil.

M. fluctuata, C. B. Adams, from Jamaica, appears to be the same as this species.

17. TRITON RIDLEYI, sp. n. (Plate XXX. fig. 1.)

Testa late fusiformis, albida, obsolete trizonata, zonis supra varices aurantiis; anfractus normales, superne declives et leviter concavi, ad medium biangulati, inferne constricti, costis longitudinalibus circiter 7 (in anfract. ultimo subtuberculiformibus inferne evanescentibus) instructi, liris spiralibus tenuibus (in anfr. penultimo 7–8) aliisque longitudinalibus tenuioribus concinne cancellati; apertura ovalis, alba; canalis brevis, dextrorsum versus; columella alba, superne arcuata, vix tortuosa, tuberculis vel liris transversis supra callum tenuem munita; labrum compresse varicosum, intus liris duodecim in paribus ordinatis instructum.

Longit. 19 millim., diam. 10.

This species belongs to the same group as *T. gallinago*, Reeve (Con. Icon. fig. 5), and *T. testudinarius*, Adams & Reeve, and some others. Although possibly not adult, the single shell at hand is in excellent condition, and affords all the necessary characters distinctive of the species. The last whorl has two varices, namely the labrum and one on the opposite side. The nuclear whorls are broken off; but, judging from the top of the first normal whorl, the apex would be comparatively small. The uppermost of the liræ on the columella is rather conspicuous, and, together with the uppermost of those within the labrum, forms a semicircular sinus above.

18. TRITON PILEARIS, *Lamarck*.

Hab. West Indies, Red Sea, Ceylon, Philippine Islands, island of Anna, &c. (*Brit. Mus.*).

This, like some other species of *Triton*, occurs at the West Indies and in the Indian and Pacific Oceans.

19. TRITON (EPIDROMUS) TESTACEUS, *Mörch*.

Hab. West Indies (*Mörch*).

This species is very like *T. obscurus*, Reeve, but differs in having more convex whorls, a granulated columellar callus, and a narrower labral varix which is also hollowed out behind.

20. CYPRÆA CINEREA, *Gmelin*, var.

Hab. West Indies.

With this species I unite *C. clara* of Gaskoin, with which the specimens from Fernando Noronha agree. This variety is of a longer and more cylindrical form than the type, has only traces of the black dotting around the base, and no purplish stain between the teeth. Sowerby's figure (Thes. Conch. pl. 307. f. 91*), badly copied by Tryon (Man. Conch. vol. vii. pl. 1. f. 8), does not represent the variety *clara*; but a fair representation of it is given by Sowerby on pl. 316, figure 222. The colour, however, is not pinkish, and no dotting occurs along the sides in the types described by Gaskoin.

21. CYPRÆA (TRIVIA) PEDICULUS, *Linné*.

Hab. West Indies.

One of the specimens from Fernando Noronha is remarkably small, measuring only 7 millim. in length.

22. LITTORINA TROCHIFORMIS, var. ? (Plate XXX. fig. 2.)

Littorina trochiformis, *Dillwyn, Philippi, Abbild.* vol. ii. p. 143, pl. ii. ff. 12, 14, 15.

Littorina nodulosa, *Watson* (*non Gmelin*), '*Challenger*' *Gasteropoda*, p. 577.

Testa parva, fusiformi-ovata, grisea vel nigrescens, albo-nodosa; anfractus 6–7, convexiusculi, superiores granorum seriebus tribus ornati, striisque spiralibus elevatis paucis sculpti, ultimus in medio obtuse angulatus, seriebus quatuor cinctus, ad basim albo punctatus; apertura nigra, fascia basali pallida ornata, inferne subacuminata; columella lata, purpurea, superne macula lutescenti notata.

Longit. 19 mill., diam. 10. Apertura 7 longa, 6 lata.
" 11 " " 9. " 6½ " 5 "

The above measurements of two specimens from Fernando Noronha show the variation in the form of this variety. The white tubercles are rather acute in some specimens, whilst in others they are scarcely raised above the surface. On the body-whorl there are two *approximated* series at the periphery and two above, and at the base is a tesselation of white and dark spots.

The shells quoted by Mr. Watson from Fernando Noronha are certainly specifically the same as those obtained by Mr. Ridley, and are, I think, almost specifically distinct from the *L. nodulosa* of d'Orbigny. They have less angular whorls and less acute nodules, of which there are *two* series on the body-whorl above the two principal series at the periphery, whilst in *L. trochiformis* (=*nodulosa*, d'Orb.) there is only a single series. The aperture, also, of the Fernando shells is darker and none of them exhibit a second pale zone at the upper part, which is nearly always visible in the West-Indian species.

23. LITTORINA ANGULIFERA (*Lamarck*).

Litorina angulifera, *Philippi, Abbild.* vol. ii. p. 223, pl. v. ff. 12–15.

Hab. West Indies, West Africa and Pacific (*Phil.*).

Only a single young specimen was obtained by Mr. Ridley; it agrees in all particulars with West-Indian specimens.

24. TORINIA ÆTHIOPS (*Menke*).

Hab. West Indies.

Both Philippi and Hanley, in their respective monographs, admit this as a distinct species, but I am inclined to think with the former * that *T. cyclostoma*, *T. nubila*, *T. cylindracea*, and the present species are mere varieties of one and the same form.

25. IANTHINA FRAGILIS, *Lamarck*.

Of the various species figured by Reeve, that which he has identified as Lamarck's *I. fragilis* (Conch. Icon. pl. ii. ff. 6 *a*, 6 *b*) closely resembles the shells from Fernando Noronha. They have the same perpendicular columella and the same division of colour, the "deep-violet" tint of the base terminating abruptly at the periphery.

26. CERITHIUM ATRATUM (*Born*).

Hab. West Indies, Pernambuco, and Rio Janeiro (*Brit. Mus.*).

I regard the *C. caudatum* of Sowerby as undoubtedly belonging to this species. "Sicily," the locality assigned by Sowerby in the 'Thesaurus Conchyliorum' and in Reeve's 'Conchologia Iconica' to *C. atratum*, is evidently incorrect.

27. MITRULARIA ALVEOLATA (*A. Adams*).

Calyptræa alveolata, *A. Adams, Reeve, Con. Icon.* vol. xi. pl. 3. ff. 8 *a–b*.

Hab. Galapagos Islands (*Reeve*); St. Kitts, West Indies (*Brit. Mus.*).

The single shell from Fernando Noronha possesses all the characteristics of the type from the Galapagos Islands. The specimens from Fernando Noronha, assigned with doubt to *M. uncinata*, Reeve, by Watson †, in all probability belong to the same species as that collected by Mr. Ridley. They are, however, only young specimens, so that their determination is all the more difficult.

28. HIPPONYX ANTIQUATUS (*Linné*).

Hipponyx antiquatus (*L.*), *Fischer, Journ. de Conch.* vol. x. p. 5, pl. ii. ff. 1–9 (anatomy); *Crosse, Journ. de Conch.* vol. x. p. 20; *Mörch, Malak. Blätt.* vol. xxiv. p. 98.

Hab. West Indies; islands of Ascension, St. Helena, and Trinidad in the South Atlantic, Peru and California (*Brit. Mus.*).

The single specimen from Fernando Noronha has the spire more recurved than any other specimen I have seen and it is inclined to the left.

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* Conch.-Cab., *Solarium*, p. 26.

† 'Challenger' Gastropoda, p. 461.

29. Hipponyx Grayanus, var.

Hipponyx Grayanus, *Menke, Carpenter, Proc. Zool. Soc.* 1856, p. 4; *Crosse, Journ. de Conch.* 1862, vol. x. p. 23.

The distribution of this species appears to be very extensive. Carpenter quotes it from Galapagos, Sandwich Islands, Panama, S.W. Mexico, Mazatlan, and St. Vincent (W. Africa). Some specimens in the British Museum from St. Helena, wrongly named *H. radiatus*, Quoy & Gaimard, by Jeffreys *, and two specimens from Fernando Noronha agree in all respects with this species except in the more excentric position of the apex, which gives them a more capuliform appearance.

30. Nerita ascensionis, *Gmelin*.

In his monograph of *Nerita* in the Conchylien-Cabinet, Dr. von Martens mentions only the island of Ascension and Guinea as localities for this species. I had previously noted † the fact of its occurrence at the island of Trinidad off the Brazilian coast, and now I record its presence at Fernando Noronha, where it was also obtained by the 'Challenger' Expedition.

31. Turbo (Calcar) Olfersi, *Troschel*.

Trochus Olfersi, *Troschel, Philippi, Conch.-Cab.* ed. 2, p. 126, pl. 22. f. 1.

Calcar Olfersi, *Fischer in Kiener's Coq. Viv.* p. 18, pl. 77. f. 1.

Trochus digitatus, *Reeve* (*non Deshayes*), *Conch. Icon.* pl. 5. f. 24; *Sowerby, Thes.* vol. v. pl. 504. fig. 135.

Hab. Brazil (*Philippi & Fischer*).

The localities quoted by Reeve and Sowerby, namely Central America and Panama, will doubtless prove incorrect.

Failing to recognize this species as *T. Olfersi*, Sowerby has placed that name among the synonymy of *T. imbricatus*, which, however, is a perfectly distinct shell. *T. digitatus* of Deshayes, as pointed out by Philippi, Fischer, and Carpenter, is identical with the common *T. unguis*, Wood, of the Californian coast.

32. Trochus (Eutrochus) jujubinus, *Gmelin*.

Hab. West Indies (*Philippi & Fischer*).

The two specimens from Fernando Noronha are more widely umbilicated than the shells figured by Reeve * and Fischer †, and also differ in form, being wider at the base and more shortly conical.

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* Ann. & Mag. Nat Hist. 1872, vol. ix. p. 264.

† *Ibid.* 1881, vol. viii. p. 431.

Fischer has already pointed out that the localities of Reeve and Lamarck, Swan River and Mauritius, are probably incorrect.

33. TROCHUS (EUTROCHUS) GEMMOSUS, *Reeve*.

This I believe, as in the case of the preceding species, is another instance of a wrong locality (Philippine Islands) assigned by Reeve.

Two specimens from Fernando Noronha agree in every minute detail with the types in the British Museum, and, as the sculpture and lineations are so remarkable, the identity is beyond doubt. The umbilicus, which is as large as that of *T. jujubinus*, at once distinguishes this species from *T. nobilis*, with which Philippi ‡ questioned its relationship. The type of *Eutrochus* was named *E. perspectivus* by A. Adams; but as that name was previously used by Koch for another species belonging to the same group, Pilsbury has renamed it *E. Adamsi*.

34. FISSURELLA CANCELLATA, *Sowerby*.

Fissurella cancellata, *Sowerby, Conch. Ill.* sp. 38, pl. 72. f. 29.

Hab. West Indies, Honduras.

With this species I would unite *Fiss. suffusa*, Reeve, and *F. lentiginosa*, Reeve. A third species of the same author, *F. ægis*, is also very similar, but the form is a little more elongate and the radiating riblets are squamose at the points of intersection with the concentric liræ.

35. FISSURELLA ALTERNATA, *Say*.

Fissurella alternata, *Say, Journ. Acad. N. Sci. Philad.* 1822, vol. ii. p. 224; *Reeve, Con. Icon.* pl. xii. f. 84 (probably).

Fissurella larva, *Reeve, l. c.* f. 98.

Fissurella Dysoni, *Reeve, l. c.* f. 86.

Hab. Maryland, &c. (*Say*); Bermuda, St. Johns, Honduras (*Brit. Mus.*).

The sculpture of the three above-named forms is essentially the same and the character of the orifice is similar, and all have the interior at the apex indented with a transverse line or pit at the larger end of the perforation, as described by Say.

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* Con. Icon., *Zizyphinus*, pl. 2. fig. 12.

† Kiener's Coq. Viv., *Trochus*, pl. 18. f. 2.

‡ Conch.-Cab., *Trochus*, p. 86.

36. ? FISSURELLA BARBADENSIS, *Gmelin.*

Hab. West Indies.

There are two or three specimens from Fernando Noronha which closely approach this species, but I do not feel absolutely certain of the identification.

37. ? FISSURELLA NUBECULA, *Linné.*

Hab. Mediterranean, Spain, Morocco, coast of Gambia, Cape Verd Islands.

Several specimens from Fernando Noronha in some respects so closely resemble this species that I hesitate to separate them. The interior is of the same greenish tint, the orifice has a purplish tint or is ringed with purple, but the outer surface is uniformly darker than Mediterranean examples. With regard to sculpture it is difficult to say that any material difference exists, as specimens from any given locality exhibit slight variations in the fineness and number of the radiating striæ, such as may be noted in the series from Fernando Noronha.

38. ACMÆA NORONHENSIS, sp. n. (Plate XXX. figs. 3, 3 *a*.)

Testa ovata, postice latior, mediocriter elevata, nigrescens, radiis pallidis picta, ad apicem, paulo ante medium situm, erosa, nigra, radiatim tenuiter striata, lineisque incrementi sculpta; pagina interna intra cicatricem nigricans, apicem versus callo tenui sensim albicans, extra cicatricem fere ad marginem cæruleo-albida, ad marginem anguste nigro limbata, antice ab apice usque ad marginem radio lato obscuro et postice alio latiore picta.

Long. 24 millim., lat. 19, alt. 9.

This species has a smoother surface than *A. subrugosa*, d'Orbigny (=*Lottia onychina*, Gould), from Rio Janeiro. Like that species, however, it has in the interior a broad obscure ray from the apex to the margin in front and a broader one at the opposite end. These rays, however, are more distinct in the present species than in the Brazilian shell. The external radiating striæ being very fine, do not, as a rule, produce a crenulated margin, but in some instances a slight crenulation occurs. The surface within the muscular scar is almost black, forming a marked contrast to the pallid space between it and the black margin. The shells found attached to rocks, when placed upon a flat surface, rest upon the anterior and posterior margins only, so that the sides are slightly raised.

39. CHITON (ISCHNOCHITON ?) PECTINATUS, *Sowerby*.

Chiton pectinatus, *Sowerby, Con. Ill.* pl. 174. f. 146; *Reeve, Con. Icon.* pl. 26. f. 133.

Hab. —— ? (*Reeve*); West Indies (*P. P. Carpenter in Brit. Mus.*).

The marginal scales are not at all well drawn by Sowerby, being much too elongate.

40. CHITON (ISCHNOCHITON) CARIBBÆORUM, *Carpenter*. (Plate XXX. figs. 5, 5*a*.)

Testa elongato-ovalis, vix carinata, varie picta, griseo-olivacea, albo, rufo et olivaceo picta, vel purpurea, interdum nigrescens, albo virgata, valvis terminalibus concentrice et rugose granoso-striatis vel squamatis, centralibus liris tenuissimis granosis curvatis flexuosis ornatis, areis lateralibus rugose granosis vel squamatis; valva postica pone apicem centralem leviter concava; cingulum minute squamatum, squamis minutis elongatis ovalibus indutum, pallide roseo-griseum, dilute nigro tessellatum.

Longit. 27 millim., diam. 9.

Hab. St. Thomas (*Brit. Mus.*).

The above appears to be a manuscript name attached to specimens in Cuming's collection which are identical with few shells from Fernando Noronha. The colour is very variable, some specimens, when viewed from a distance of twelve inches, appearing olive-grey speckled with white; others are of a pinkish cream-colour speckled with red or blotched along the sides in front of the lateral areas with black, as in some of the specimens from Fernando Noronha. The granules or scales of the lateral area and on the front and posterior valves are peculiarly flat and are somewhat transversely arranged on the former and concentrically on the latter. The central areas are finely punctured along the centre, and become more and more coarsely granosely lirate as the sides are approached. One example is almost entirely reddish purple, and others are blackish with a broad pallid stripe down the middle from end to end.

41. CHITON (ACANTHOCHITON) ASTRIGER, *Reeve*.

Chiton astriger, *Reeve, Conch. Icon.* pl. xviii. f. 109.

Hab. Barbados.

Reeve describes this species as "smooth along the summit, very closely finely striated on each side." This is not at all accurate. The central portion of the non-terminal valves has a defined elongate subtriangular space which is sculptured with minutely granular lines, and the sides are densely but rather more coarsely granulated. The figure (47) of the detail of sculpture of *C. spiculosa*, Reeve, which I believe to be the same species, gives quite as good an idea of the ornamentation as figure 109. The outer margin of the mantle bears a fringe of the same glassy spicules as compose the tufts.

42. DORIS, sp.

A single specimen was obtained, which appears to belong to the same species as an unnamed example in the British Museum from the West Indies.

43. APLYSIA, sp.

An animal about an inch long is all that was found. It probably is not full-grown. No attempt has been made to identify either this or the preceding, as both belong to difficult groups requiring special study.

44. SIPHONARIA PICTA, var.?* (Plate XXX. figs. 4–4 *b*.)

Hab. Rio Janeiro (*d'Orbigny*).

The specimens from Fernando Noronha are externally blackish with numerous white radiating costæ. The inner surface also is much darker than in the type specimens from Brazil. *S. hispida*, Gould, also from Rio Janeiro, appears to be the same species. *S. lineolata*, d'Orbigny, from Cuba, is a larger form, and the only species that appears to have been discovered in the West Indies. One or two species are known from Bermuda (*S. brunnea*, Hanley); and Say has described a form from East Florida.

45. VENUS (ANAITIS) PAPHIA, *Linné*.

Hab. West Indies and Cape Verd Islands (*Brit. Mus.*).

46. CARDIUM SUBELONGATUM, *Sowerby*.

Hab. St. Thomas, West Indies.

47. CARDIUM MEDIUM, *Linné*.

Hab. West Indies.

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* D'Orbigny, 'Voy. Amér. Mérid.' vol. v. p. 469, pl. 56. ff. 7–11.

48. SEMELE CORDIFORMIS, *Chemnitz*.

1766. Tellina reticulata, *Linné?*, *Syst. Nat.* ed. 12, p. 1119.

1795. Tellina cordiformis, *Chemnitz, Conch.-Cab.* vol. xi. p. 208, pl. 199. ff. 1941–2.

1815. Tellina decussata, *Wood, Gen. Conch.* p. 190, pl. 43. figs. 2, 3.

1822. Amphidesma orbiculata, *Say, Journ. Acad. Nat. Sci. Philad.* vol. ii. p. 307; *Reeve*, f. 13.

1826. Amphidesma radiata, *Say, l. c.* vol. v. p. 220; *Reeve* (as of *Rüppell*), f. 12.

1832. Amphidesma lenticularis, *Sowerby, Proc. Zool. Soc.* 1832, p. 200; *Con. Ill.* f. 9; *Reeve*, f. 39.

1841. Amphidesma reticulata, *Sowerby, Con. Illust.* p. 8; *Reeve*, f. 29.

1841. Amphidesma snbtruncata, *Sowerby, l. c.* p. 7.

1845. Amphidesma Jayanum, *C. B. Adams, Proc. Bost. Soc. Nat. Hist* vol. ii. p. 10.

1853. Semele sinensis, *A. Adams, Proc. Zool. Soc.* 1853, p. 95; *Reeve*, f. 28.

1853. Semele luteola, *A. Adams, l. c.* p. 95; *Reeve*, f. 42.

1853. Semele modesta, *A. Adams, l. c.* p. 95; *Reeve*, ff. 35 *a–b*.

1853. Amphidesma cordiformis, *Reeve, Con. Icon.* f. 30.

Hab. West Indies, Bermuda, Rio Janeiro, Ascension Island, St. Helena, Cape Palmas, and Fernando Po (*Brit. Mus.*).

Having carefully studied a large series of specimens from the above localities, the types of *S. lenticularis*, said to have been obtained in West Colombia, also the types of *S. chinensis*, *S. reticulata* (Sow.), *S. subtruncata*, *S. luteola*, and *S. modesta*, also the specimens figured by Reeve, I am inclined to believe that all the above-named forms constitute but a single variable species.

Some authors have considered this species to be the *Tellina reticulata* of Linné; but I am rather inclined to think, with Hanley, that there is not sufficient evidence to determine this with any degree of certainty. The locality "China," from which Adams named a form *S. sinensis*, I regard simply as one more of the innumerable errors of "habitat" occurring in Cuming's collection.

49. CHAMA, sp. incert.

Several specimens of a species of *Chama* were taken on the rocks; but the surfaces are so eroded and water-worn, that it is impossible to determine them.

50. MYTILUS EXUSTUS (*Lamarck*), *Reeve.*

This is a West-Indian species, and was also obtained by the 'Challenger' expedition at Fernando Noronha and Pernambuco*.

51. ARCA IMBRICATA, *Bruguière.*

This species was also obtained by the 'Challenger' Expedition at Fernando Noronha; and other examples were dredged near Cape York, N. Australia. This seems a remarkable distribution; still, as far as I can discover, there appears to be no difference in the shells.

52. ARCA (ACAR) ADAMSII, *Shuttleworth, MS.?*—Arca Adamsi *in Cuming's Collection.* (Plate XXX. figs. 6, 6 *a.*)

Testa oblonga, subquadrata, sordide albida, inæquilateralis, antice curvata, postice oblique arcuata, inferne in medio levissime sinuata, lineis elevatis radiantibus aliisque concentricis cancellata; umbones parvi, parum remoti, paulo ante medium collocati; area dorsalis angusta, utrinque acuminata; ligamentum minimum, adamantiforme, transversim striatum; pagina interna alba, radiatim plus minus substriata.

Longit. 12 millim., alt. $7\frac{1}{2}$, diam. $7\frac{1}{2}$.

Hab. St. Vincents, Jamaica, and St. Thomas (*Brit. Mus.*).

Two specimens bearing the above name occur in Cuming's collection, and others from Jamaica presented by Dr. P. P. Carpenter are also similarly labelled; but I have not succeeded in finding any description by Shuttleworth of this species.

It is closely related to *A. lactea*, Linn., *A. solida*, Sowerby, and some others. The points of contact of the radiating and concentric liræ are nodulous, and a little coarser than in either of the above-named species. The muscular impressions are clearly defined by a raised ridge which is continued upward towards the umbones.

53. LIMA SQUAMOSA, *Lamarck*, var.

Hab. Atlantic, Pacific, and Indian Oceans.

The distribution of this species is given in my Report upon the 'Challenger' Pelecypoda. The specimens from Fernando Noronha seem intermediate between *L. squamosa* and *L. multicostata*, having fewer ribs than the latter, and more than typical examples of the former.

A specimen 22 millim. long has twenty-six ribs, and another example 16 millim. in length has but twenty-one.

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* *Vide* 'Report on 'Challenger' Lamellibranchiata, p. 272.

54. SPONDYLUS, sp.

A few odd valves picked up on the shores are too much worn to be identified with certainty. About a dozen forms have been described as West-Indian; and doubtless it is one or more of these species which occur at Fernando Noronha.

II. TERRESTRIAL SPECIES.

1. HELIX (OPHIOGYRA?) QUINQUELIRATA. (Pl. XXX. figs. 7–7*c*.)

Testa discoidea, supra leviter convexa, inferne anguste umbilicata, tenuis, viridi-flavescens, nitida; anfractus 7, lente accrescentes, convexi, incrementi lineis striati, supra peripheriam indistincte concavus, antice haud descendens, intus plicis tribus inæqualibus perlucentibus munitus, lamellisque duobus validis parietalibus instructus; apertura semilunata, parva; peristoma tenue, haud expansum.

Diam. maj. 6 millim., min. 5½, alt. 3.

Hab. Found, both living and dead, at the north end of the island, also on Platform Island.

H. entodonta, Pfeiffer, from Ecuador, is an allied form; but has a flatter spine, more open umbilicus, and no parietal liræ.

2. BULIMUS (TOMIGERUS) RAMAGEI, sp. n. (Plate XXX. fig. 8.)

Testa subovata, rimata, solida, fusca, zonis angustis albis transversis (in anfr. ultimo quatuor) cincta; anfractus 5, convexiusculi, lineis incrementi subrugosis, striisque tenuissimis spiralibus sculpti, ultimus magnus, antice descendens, post labrum contractus, scrobiculatus; apertura irregularis, longitudinis totius ½ paulo superans, dentibus quatuor inæqualibus (duobus parvis in pariete aperturali, uno magno compresso in margine dextro, uno tuberculiformi valido in margine columellari) munita; peristoma album, valde incrassatum, leviter reflexum, marginibus callo craso junctis.

Longit. 23½ millim., diam. 16.
" 17½ " " 12½.

The above measurements show that considerable difference exists in the size of specimens; and it is a curious fact that the smallest example, obtained from a native, is the only one which appears in fairly fresh condition. All the rest were found by Mr. Ramage imbedded in sandy mud on a raised reef at Tobacco Point, and have a semi-fossilized appearance.

The only forms at all approaching that now described are the species of *Tomigerus*, all of which, however, have a much more complicated oral dentition, and are of different form, with the last whorl ascending, and other marks of distinctness.

In general form and texture of the shell it is not at all unlike *Pythia inflata*, Pfeiffer; but of course has not the expanded lip or the same dentition as that genus.

Two only of the twenty specimens which I have examined exhibit any variation in the teeth of the aperture. These want the two parietal denticles.

3. Bulimus (Bulimulus) Ridleyi, sp. n. (Plate XXX. fig. 9.)

Testa parva, ovata, superne acuminata, umbilicata, fusca, ad peripheriam luteo-lineata; anfractus 5–6, convexiusculi, lineis incrementi striisque spiralibus tenuissimis sculpti, ultimus antice haud descendens; apertura ovata, intus fusco-carnea, linea pallide mediana ornata, longit. totius $\frac{1}{2}$ ad æquans; peristoma undique expansum, carneo-albidum, marginibus callo tenui (interdum crasso) superne subtuberculiformi junctis.

Longit. 12 millim., diam. 6.

Hab. Living under bark of Mango-trees in the garden and on the north side of the island; also found at the base of the Peak, north side, under stones, and on Rat Island.

I do not know any species sufficiently near this form wherewith to offer a comparison. It resembles somewhat in form certain species of *Partula*; it faintly recalls, chiefly on account of colour, *Bulimus Jacobi*, from the Galapagos Islands; and the spiral striation, although finer, somewhat resembles that of some of the species of the genus *Plecotrema*.

4. Pupa solitaria, sp. n. (Plate XXX. figs. 10, 10 *a*.)

Testa minuta, rimata, albida, ovato-cylindracea; anfractus 5, convexi, striis incrementi tenuibus sculpti, sutura vix obliqua sejuncti, ultimus pone labrum subvaricosus; apertura parva, quinque-dentata; dente valido duplici columellari, uno minore etiam duplici in pariete aperturali, duobus parvis ab margine dextro remotis, quinto minuto basali; peristoma anguste expansum, album, marginibus callo tenui junctis.

Longit. $2\frac{1}{3}$ millim., diam. $1\frac{1}{4}$.

Hab. Platform Island.

This species is a trifle less cylindrical than *P. pellucida*, Pfeiffer, a Cuban species; but has the number of teeth and their arrangement similar. The columellar tooth, however, is double, the upper portion of it being most prominent; the tooth above it upon the body-whorl is single, bifurcating at the end. The three remaining teeth are rather remote from the margin of the aperture. The anterior part of the last whorl just behind and parallel to the labrum exhibits a longitudinal swelling or varix, towards which the lip expands.

5. STENOGYRA (OPEAS) OCTONOIDES, *C. B. Adams.*

Hab. Jamaica, Cuba, St. Thomas.

This species is more strongly striated than *S. subula*, has rounder whorls, a deeper suture, and a larger apex.

Four specimens were obtained at Platform Island.

6. STENOGYRA (OPEAS) SUBULA, *Pfeiffer.*

Hab. Cuba, Porto Rico, &c.

The specimens from Fernando Noronha agree exactly with examples of this species from Porto Rico. They were found beneath stones on the promontory between Chaloupe Bay and S. Antonio Bay.

7. STENOGYRA (OPEAS) BECKIANA, var.

Hab. Island of Opara, Peru, Brazil.

The shells from Fernando Noronha, obtained at the same spot as the preceding species, answer well to Pfeiffer's description; but they are *more strongly costulate* than Brazilian specimens with which I have compared them.

III. FRESHWATER SPECIES.

1. PLANORBIS NORONHENSIS, sp. n. (Plate XXX. figs. 11–11 *b*.)

Testa parva, valde compressa, superne in medio depressa, inferne subplanulata, albida, tenui, subpellucida; anfractus 4, superne convexiusculi, striis incrementi tenuissimis sculpti, inferne radiatim subplicati, ad suturam angustissime marginati, ultimus infra medium obtuse carinatus; peristoma tenue, marginibus callo filiformi junctis, superiore oblique arcuato.

Diam. maj. 5 millim., min. 4⅓, alt. 1.

This species is about the same size and shape as *P. Gilberti*, Dunker, and *P. fragilis*, Brazier, from Australia. The lower surface, however, is flatter, and the curve of the lip different when viewed from above. It was very plentiful in the lake on the south-west corner of the island.

List of Species obtained at Fernando Noronha by the 'Challenger' Expedition.

Acmæa, sp.
Littorina nodulosa, *d'Orb.*
Nerita ascensionis, *Gmelin.*
Cerithiopsis, sp.
Columbella mercatoria, *Linn.*
Cylichna noronyensis, *Watson.*
Fossarus ambiguus (*Linn.*).
Marginella sagittata, *Hinds.*
Mitrularia uncinata (*Rve.*).
Nassa capillaris, *Watson.*
Oliva fulgida, *Reeve.*
—— pulchella (?), *Duclos.*
Phasianella, sp.
Rissoa, sp.
Scalaria hellenica, *Forbes.*
Siphonodentalium tetraschistum, *Watson.*
Solarium, sp.
Stomatella nigra, *Quoy & G.*
Utriculus canaliculatus (*Say*).
Xenophora corrugata (*Reeve*).
Chiton Boogii, *Haddon.*
Pectunculus pectinatus (*Gmelin*).
Ervilia subcancellata, *Smith.*
Cardium medium, *Linné.*
Lucina pecten, *Lamarck.*
Mytilus exustus, *Rve.*
Arca imbricata, *Brug.*
Pecten noronhensis, *Smith.*

For the above species, see the Reports on the Gasteropoda, Polyplacophora and Lamellibranchiata, by R. B. Watson, A. C. Haddon, and E. A. Smith respectively.

EXPLANATION OF PLATE XXX.

Fig. 1. *Triton Ridleyi*, sp. n.
2. *Littorina trochiformis*, var.
3, 3 *a*. *Acmæa noronhensis*, sp. n.
4–4 *b*. *Siphonaria picta*, var.
5. *Chiton* (*Ischnochiton*) *carribæorum.*
5 *a*. Ditto. Central valve, magnified.
6, 6 *a*. *Arca* (*Acar*) *Adamsii.*
7–7 *c*. *Helix* (*Ophiogyra* ?) *quinquelirata.* 7 *c*. Aperture, enlarged; lip broken away to show the teeth.
8. *Bulimus* (*Tomigerus*) *Ramagei*, sp. n.
9. „ (*Bulimulus*) *Ridleyi*, sp. n.
10. *Pupa solitaria*, sp. n. 10 *a*. Aperture, enlarged.
11–11 *b*. *Planorbis noronhensis*, sp. n.

POLYZOA.

By R. Kirkpatrick,
Assistant in Zoological Department, British Museum.

POLYZOA.

The specimens chiefly encrust shells, and are generally much worn away.

1. Aetea recta, *Hincks.*
2. Synnotum aviculare, *Pieper.*
3. Scrupocellaria frondis, n. sp.
4. Cribrilina radiata, *Moll.*
5. Smittipora antiqua, *Busk.*
   (*Mollia antiqua*, Smitt.)
6. Steganoporella Smittii, *Hincks.*
7. Mastigophora Dutertrei, *Audouin.*
8. Schizoporella unicornis, *Johnston.*
9. Lepralia depressa, *Busk.*
   (*Escharella rostrigera*, Smitt.)
10. Lepralia cleidostoma, *Smitt.*
11. Rhynchopora bispinosa, *Johnst.*—(Encrusting *Gorgonia* axis.)
12. Cellepora Ridleyi, n. sp.
13. Microporella violacea, *Johnst.*—Encrusting *Gorgonia* axis; (both purple and white varieties).
14. Crisia Holdsworthii, *Busk.*
15. Amathia brasiliensis, *Busk.*

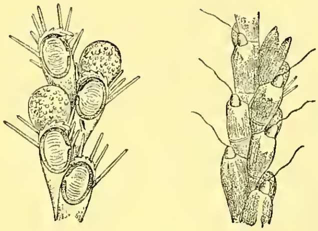
Family Cellulariidæ.

Genus Scrupocellaria.

Scrupocellaria frondis, n. sp.

Zoœcia of medium size, alternate; area oval, occupying nearly half the front of cell; spines 2–4 on the outer side, 2 on the inner; lowermost spine on outer side bending over the top of the aperture and giving off processes from its upper border; operculum entire, large, oval, marked with concentric striæ; on some cells a small pointed avicularian cell projecting from the front of the cell; lateral avicularia wanting; on dorsal surface vibracula, small, flattened, obliquely placed; setæ long. Oœcia small, globose, vitreous, punctured.

Fig. 1.



Scrupocellaria frondis, n. sp.

The presence of the antler-like spine across the top of the area is a marked character of *S. frondis*.

Loc. Fernando Noronha; Pernambuco.

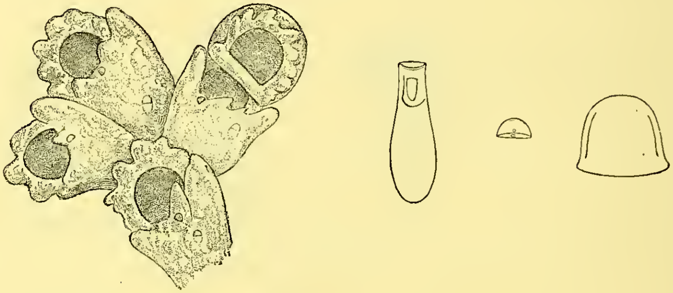
Family CELLEPORIDÆ.

Genus CELLEPORA.

CELLEPORA RIDLEYI, n. sp. (Fig. 2, p. 506.)

Zoarium loosely encrusting; zoœcia decumbent, rectangular, and flattened at the margins, heaped, somewhat ventricose subvertical in the centre, separated by raised lines; orifice from semicircular to subquadrate, with concave proximal margin; two or three short processes surrounding the orifice; at base of an anterior process a small avicularium facing inwards, with small semicircular mandible. On the front of some cells a small avicularian cell with small rounded mandible. Oœcium shaped like a thick semi-disc, concave below, overhanging the mouth of the cell; mucronate processes on the upper surface; front wall of oœcium with a semicircular membranous area on the front wall.

Fig. 2.



Cellepora Ridleyi, n. sp.

The oœcium of *C. Ridleyi* is remarkable in its shape and relations to the zoœcium; also there is a curious resemblance between the membranous area and the orifice of the zoœcium.

Loc. Fernando Noronha.

CRUSTACEA.

By R. I. Pocock,

Assistant in the Zoological Department, British Museum.

Introductory Remarks.—The fauna is in all essential respects allied to that of the mainland and of the Antilles. The following wide-spread forms were, as might have been expected, met with:—*Grapsus maculatus*, *Leiolophus planissimus*, *Hippa scutellata*, *Alpheus Edwardsii*, and *Gonodactylus chiragra*. There are two new species of *Alpheus*, one of *Panulirus*, and one of *Stenopusculus* (*S. spinosus*). The last mentioned genus has hitherto only been known from the island of Mauritius; its occurrence here, therefore, is of great interest. A new freshwater Ostracod was also obtained.

DECAPODA.

MAIOIDEA.

Family PERICERIDÆ.

Genus MICROPHRYS, *M.-Edwards.*

1851. Microphrys, *M.-Edwards, Ann. Sci. Nat. Zool.* 3, xvi. p. 251.
1879. Microphrys, *Miers, Journ. Linn. Soc.* (*Zool.*) xiv. p. 664.
1881. Microphrys, *A. M.-Edwards, Miss. Sci. Mex.* (*Crust.*) p. 59.

MICROPHRYS BICORNUTUS (*Latreille*).

1825. Pisa bicornuta, *Latreille, Encycl. Méth. Hist. Nat.* x. p. 141.
1872. Microphrys bicornutus, *A. M.-Edwards, Nouv. Arch. Mus. Hist. Nat.* viii. p. 247.
1881. Microphrys bicornutus, *id. Miss. Sci. Mex.* (*Crust.*) p. 61, pl. xiv. figs. 2, 3, 4.

Nine specimens, six males and three females (two with ova).

This species is common on the coasts of Florida, Mexico, and of the West-Indian Islands. Occurred under stones and on coral-reef.

Genus MITHRAX (*Leach*).

1817. Mithrax (*Leach*), *Latreille, Règne Animal*, iii. p. 23.
1834. Mithrax, *Milne-Edwards* (in pt.), *Hist. Nat. Crust.* i. p. 317.
1879. Mithrax, *Miers, Journ. Linn. Soc.* (*Zool.*) xiv. p. 667.

MITHRAX VERRUCOSUS, *M.-Edwards.*

1832–38. Mithrax verrucosus, *M.-Edwards, Mag. Zool.* vii. pl. 4.
1881. Mithrax verrucosus, *M.-Edwards, Miss. Sci. Mex.* p. 102.

Four specimens, two males and two females (one with ova).

The largest specimen (a male), with the following measurements of carapace, width 42 mm., length 35 mm., differs considerably from the others, of which the smallest (the female with ova) gives the following measurements of carapace:—width 17 mm., length 15 mm. In the three small specimens all the spines are sharper and relatively longer, and the carpus of the chelipedes is armed above with four or five minute spines in addition to the three spines which adorn its anterior (interior) margin.

Brazil and the West Indies are localities given for this species. Under stones at Morro do Chapeo.

MITHRAX (TELEOPHRYS) CRISTULIPES (*Stimpson*).

1862. Teleophrys cristulipes, *Stimpson, Ann. Lyc. Nat. Hist.* vii. p. 190 pl. ii. fig. 2.

1881. Teleophrys cristulipes, *A. M.-Edwards, Miss. Sci. Mex.* (*Crustacea*), p. 113, pl. xix. fig. 2.

Regions of the carapace defined by shallow sulci. Superior surface of body and limbs tubercular, inferior surface smooth.

Carapace broader than long, beset with low, inconspicuous, scattered tubercles which vary in distinctness. The principal tubercles arranged as follows:—two or three on each half of the rostrum between the superior orbital prominences, one on each side of the middle line at the base of the rostrum, two in longitudinal series on each side of the gastric region, several on the branchial regions, and three on the anterior lateral margin of each. Orbit furnished in front with a superior and an inferior blunt prominence. Not furnished with spines or prominences behind.

Rostrum short, broad, with upturned anterior margin, not deeply bifid, marked above with central sulcus, and separated on each side from the superior orbital prominence by a conspicuous depression. Its anterior margin projecting slightly beyond the middle of the basal segment of the antennæ and slightly in front of the inferior orbital prominence.

Chelipedes large; merus tubercular above and furnished below in front with three large, rounded, compressed teeth; carpus furnished above with four or five tubercles, and with one blunt tooth in front. Hand smooth; its distal portion compressed above and below into a crest. Dactylus and pollex meeting only at the apices. Dactylus furnished with a single tooth.

In the first pair of legs the merus is furnished above with two longitudinal rows of prominences, the posterior row consisting of lower rounded tubercles, which distally decrease in size, the anterior row of five higher, compressed, sharper teeth, which distally increase in size; distal margin of the segment produced into five rounded prominences, varying in size; the carpus, in addition to three or four low tubercles on its centre, with its distal margin furnished with a larger anterior and a smaller posterior tubercle, and its antero-superior surface with a larger proximal and a smaller distal tooth; propodos furnished above with two tubercles, one near the centre, the other at its distal margin; claw long, curved, hairy below, with its distal portion serrate below.

The arrangement of tubercles and teeth upon the second, third, and fourth pairs of legs is nearly the same as the arrangement upon the first pair, but the posterior row of meral tubercles becomes progressively fainter from before backwards, and the teeth of the anterior row become gradually modified in form and number until, in the posterior pair of limbs, this row is formed of four teeth, two larger and two smaller, the larger and smaller alternating, and one of the larger being the most proximal of the series. Width of carapace 7½ mm., length 7 mm.

One male specimen was obtained.

To guide me in the identification of the Fernando-Noronha specimen, which I refer to *T. cristulipes* (Stimps.), I have had to trust to the descriptions and figures of that species published by Dr. Stimpson and by M. Alphonse Milne-Edwards, and to my own examination of a single imperfect individual which was taken off Cape St. Lucas (California), and presented to the British Museum by the Smithsonian Institute.

Now, although with the above-mentioned figures and descriptions the specimen from Fernando Noronha does not present agreement in all points, yet, making allowance for possible errors on the part of the artists, I should unhesitatingly have referred this specimen to *T. cristulipes* (Stmps.) were it not for the fact that the points of difference between it and the specimen from Cape St. Lucas are by no means inconsiderable.

In the Californian specimen the sulci defining the regions of the carapace are conspicuously deeper, and the tubercles of the same part, though exhibiting in the main the same arrangement, are much larger. This is especially the case with regard to those of the branchial region, the three low tubercles of the antero-lateral margin in the Noronha specimen being represented in the Californian specimen by three large upstanding teeth. Again, with regard to the limbs, the merus of the chelipede in the Californian specimen is furnished below in front with one large compressed tooth and the pollex is armed with two small teeth, these small teeth being scarcely represented in the Noronha specimen. The other limbs present much the same arrangement of teeth in the two specimens, but, as in the case of the carapace, the teeth of the Californian specimen are relatively larger than those of the Noronha specimen.

I am well aware that the differences thus set forth are amply sufficient to justify the separation as distinct species of the specimens which they characterize; yet having but one example from each locality, I am unable to determine the constancy of the differences presented, and must consequently leave the decision of the question as to the specific identity or distinction of the two to those whom either the possession of a long series of forms or a more perfect acquaintance with this group of Crustacea places in a better position to judge than myself.

I am not aware that this species, or at all events any closely allied form, has before this been recorded from the eastern coast of America. Stimpson obtained it from Cape St. Lucas and M. Alphonse Milne-Edwards has described it from the Bay of Panama.

MITHRAX (MITHRACULUS) CORONATUS (*Herbst*).

1782. Cancer coronatus, *Herbst, Naturg. der Krabben*, i. p. 184, pl. xi. fig. 63.

1881. Mithraculus coronatus, *A. Milne-Edwards, Miss. Sci. Mex.* (*Crustacea*), p. 106, pl. xx. fig. 1.

Eight males and seven females (three with ova) were taken.

This species occurs on the coasts of Brazil, Central America, and of the West-Indian Islands. Its presence in Fernando Noronha has been previously mentioned by Mr. E. J. Miers, two small specimens having been obtained from that island during the voyage of H.M.S. 'Challenger.'

CANCROIDEA.

Family CANCRIDÆ.

Genus CARPILIUS (*Leach, MS.*), *Desmarest*.

1825. Carpilius, *Desmarest, Consid. gén. sur la classe des Crust.*, footnote, p. 104.

1834. Carpilius, *Milne-Edwards* (pt.), *Hist. Nat. Crust.* i. p. 380.

1865. Carpilius, *A. Milne-Edwards* (pt.), *Nouv. Arch. Mus. Hist. Nat.* i. p. 212.

1886. Carpilius, *E. J. Miers, Brachyura of H.M.S. 'Challenger,'* p. 110.

CARPILIUS CORALLINUS (*Herbst*).

1782. Cancer corallinus, *Herbst, Naturg. der Krabben*, i. p. 133, pl. v. fig. 40.

1865. Carpilius corallinus, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* i. p. 216.

Three specimens, two males and one female.

This species is the West-Indian representative of the genus. [These crabs are exported in wooden crates filled with dry leaves to Pernambuco, where they are in great demand as food. We were told they were land-crabs.—*H. N. R.*]

Genus ACTÆA, *de Haan.*

1850. Actæa, *de Haan, Crust. in Siebold, Fauna Japonica,* dec. i. p. 18.

ACTÆA ACANTHA, *Milne-Edwards.*

1834. Cancer acanthus, *M.-Edwards, Hist. Nat. Crust.* i. p. 379.

1881. Actæa acantha, *A. M.-Edwards, Miss. Sci. Mex.* (*Crust.*) p. 245, pl. xliii. fig. 1.

One minute specimen, a male, was obtained.

It is only comparatively lately that the locality of this species has been made known by M. Alphonse Milne-Edwards, who received a specimen of it from Guadeloupe.

Genus LEPTODIUS, *A. Milne-Edwards.*

1863. Leptodius, *A. Milne-Edwards, Ann. Sci. Nat., Zool.* sér. 4, xx. p. 283.

1873. Leptodius, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* ix. p. 221.

1886. Leptodius, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 136.

LEPTODIUS AMERICANUS (*Saussure*).

1858. Chlorodius americanus, *H. de Saussure, Mém. sur divers Crust. nouv. du Mex. et des Antilles,* p. 14, pl. i. fig. 5.

1881. Leptodius americanus, *A. Milne-Edwards, Miss. Sci. Mex.* (*Crust.*) p. 269.

Of this species eight specimens (5 males, 3 females with ova) were obtained. It is found in the West Indies and Florida.

Genus LOPHACTÆA, *A. Milne-Edwards.*

1862. Lophactæa, *A. Milne-Edwards, Ann. Sci. Nat., Zool.* sér. 4, xviii. p. 43.

1865. Lophactæa, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* i. p. 245.

1886. Lophactæa, *E. J. Miers, Brachyura of H.M.S. 'Challenger,'* p. 113.

LOPHACTÆA LOBATA, *Milne-Edwards.*

1834. Cancer lobatus, *Milne-Edwards, Hist. Nat. Crust.* i. p. 375.

1865. Lophactæa lobata, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* i. p. 249, pl. xvi. fig. 3.

A single male specimen. This is a West-Indian and Mexican species.

GRAPSOIDEA.

Family Ocypodidæ.

Genus Ocypoda, *Fabricius.*

1798. Ocypoda, *Fabricius* (pt.), *Ent. Syst. Suppl.* p. 347.
1837. Ocypoda, *Milne-Edwards, Hist. Nat. Crust.* vol. ii. p. 41.
1880. Ocypoda, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 179.
1886. Ocypoda, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 237.

Ocypoda arenaria (*Catesby*).

1771. Cancer arenarius, *Catesby, Hist. of the Carolinas,* ii. p. 35, pl. xxxv.

1880. Ocypoda arenarius, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 184.

1882. Ocypoda arenarius, *Miers, Ann. Mag. Nat. Hist.* ser. 5, x. p. 384, pl. xvii. fig. 7.

Five adult specimens (four males and one female).

[Common in holes in the sand at Sueste Bay and Sambaquichaba.—*H. N. R.*]

Family Grapsidæ.

Genus Grapsus, *Lamarck.*

1818. Grapsus, *Lamarck* (pt.), *Hist. Nat. Anim. sans Vert.* v. p. 247.
1880. Grapsus, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 192.
1886. Grapsus, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 254.

Grapsus maculatus (*Catesby*).

1771. Pagurus maculatus, *Catesby, Nat. Hist. Carolinas,* ii. p. 36, pl. xxxvi. fig. 1.

1880. Grapsus maculatus, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 192.

This species has a very wide range, occurring upon the coasts of the warmer temperate and tropical parts of the Indian, Pacific, and Atlantic Oceans. It is exceedingly variable, and the extent of variation is well shown by the specimens brought from Fernando Noronha.

Five immature and two adult males were obtained; the former are of a dark green colour with feeble indications of *maculæ*, the latter red-brown with maculæ well developed. [Very common on the rocks all over the group, running briskly just above water-mark and leaping from stone to stone.—*H. N. R.*]

Genus Plagusia, *Latreille*.

1806. Plagusia, *Latreille* (pt.), *Gen. Crust. Ins.* i. p. 33.
1837. Plagusia, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 90.
1878. Plagusia, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 148.
1886. Plagusia, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 271.

Plagusia depressa (*Fabricius*).

1775. Cancer depressus, *Fabricius, Syst. Ent.* p. 406.
1782. Cancer squamosus, *Herbst, Naturg. der Krabben,* i. p. 260, pl. xx. fig. 113.
1878. Plagusia depressa, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 149.

[This ran about on the stones and rocks like the *Grapsus*.—*H. N. R.*]

Genus Leiolophus, *Miers*.

1850. Acanthopus, *de Haan, Faun. Japon., Crust.*, p. 29 (nom. præocc.).
1876. Leiolophus, *Miers, Cat. New-Zeal. Crust.* p. 46.
1878. Leiolophus, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 153.

Leiolophus planissimus (*Herbst*).

1804. Cancer planissimus, *Herbst, Naturg. der Krabben,* iii. Heft 4, p. 3, pl. lix. fig. 3.
1878. Leiolophus planissimus, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 153.

A single specimen (female with ova) of this wide-spread form was taken.

PORCELLANIDEA.

Family Porcellanidæ.

Genus Petrolisthes, *Stimpson*.

1859. Petrolisthes, *Stimpson, Proc. Acad. Nat. Sci. Philad.* x. p. 227.

Petrolisthes marginatus, *Stimpson*.

1862. Petrolisthes marginatus, *Stimpson, Ann. Lyc. Nat. Hist. New York*, vii. p. 74.

I have had no opportunity of examining specimens of *P. marginatus* (Stimpson), and consequently not being certain of the correctness of the identification of the specimens that I have referred to that species, I have thought it desirable to publish a description of them which may, so far as is possible, furnish a test as to the accuracy of the conclusion that has been arrived at.

Carapace and upper surface of limbs pubescent. Width of carapace approximately equal to its length. Carapace smooth, punctured; its anterior half furnished laterally with a small, sharp, upstanding spine. From this spine there extends backwards into the posterior half of the carapace a granular ridge which serves to separate the superior portion of the carapace from the lateral portion. The frons is slightly depressed and is marked off from the hinder portion of the carapace by a distinct ridge, which runs transversely between the posterior margins of the orbits. In the middle this ridge is interrupted by a conspicuous sulcus, which extends to the central lobe of the frons. This lobe is rounded anteriorly; its lateral margins are nearly vertical to the remainder of the anterior margin of the frons and approximately parallel to the superior margin of each orbit, which is the lateral border of the frons. The anterior half of this lateral border marked off from the posterior half by being at a conspicuously lower level.

Basal segment of antenna furnished on the inner side with a small acute spine.

Upper surface of chelipede covered with more or less squamiform granules; lower surface smooth. Anterior margin of upper surface of meral segment produced into a sharp process; beneath this, on the under surface, is a sharp spine, which may be bifid; posterior margin of upper surface spined. Anterior margin of upper surface of carpal segment furnished with three or four sharpened processes; posterior margin spined and produced distally into a spined process. The middle of the upper surface bearing a longitudinal series of larger squamiform tubercles. Inferior border of anterior surface of carpal segment granular; rest of the surface smooth. Anterior and posterior margins of manus and dactylus granular. A slightly curved series of larger squamiform granules extending along the upper surface of the manus from its carpal to the middle of its dactylar joint. Continuous with this is a series running from the base to the apex of the dactylus. Apex of dactylus and of thumb smooth and curved.

Anterior and posterior margins of meral segments of second, third, and fourth pairs of legs spined; posterior margin of second and third pairs produced distally into a small acute spine.

Colour (of specimens preserved in spirit of wine) red or yellow above, with darker spots, reddish pink beneath.

Three specimens. Length and width of carapace in largest specimen 14 mm.; length of manus and pollex 20 mm.

The specimens that I have here described and identified provisionally as *P. marginatus* (Stmps.) are evidently closely allied to *P. asiaticus* (Leach), the common Indo-Pacific form, and I am doubtful if they should be regarded other than as varieties of that species.

HIPPIDEA.

Family HIPPIDÆ.

Genus REMIPES, *Latreille*.

1806. Remipes, *Latreille, Gen. Crust. Ins.* i. p. 45.
1837. Remipes, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 204.

REMIPES SCUTELLATUS (*Fabricius*).

1793. Hippa scutellata, *Fabricius, Ent. Syst.* ii. p. 474.
1858. Remipes cubensis, *H. de Saussure, Mém. sur Crust. nouv. du Mex. et des Antilles,* p. 36, pl. ii. fig. 19.
1878. Remipes scutellatus, *Miers, Journ. Linn. Soc.* (*Zool.*) xiv. p. 319.

The species occurs on the tropical coasts of the Atlantic.

Twenty-three specimens, two of which are females with ova, were taken. [Very common on the sandy shores. When a wave broke, these little crustacea were often seen running and burying themselves in the sand as the water retired.—*H. N. R.*]

THALASSINIDEA.

Family GEBIIDÆ.

Genus GEBIA.

1816. Gebia, *Leach, art.* Annulosa, *Edinb. Encycl.* vii. p. 419.
1837. Gebia, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 312.

GEBIA SPINIGERA, *S. I. Smith.*

1869. Gebia spinigera, *Smith, Rep. Peabody Acad. Sci.* p. 92.

Eight specimens, one female with ova, were brought back.

The species was originally described from specimens obtained upon the west coast of Central America.

ASTACIDEA.

Family PALINURIDÆ.

Genus PANULIRUS, *Gray*.

1847. Panulirus, *Gray, Cat. Brit. Mus.* (*Crust.*) p. 69.
1852. Panulirus, *Dana, Crust. U.S. Expl. Exp.* i. p. 519.

PANULIRUS ECHINATUS, *S. I. Smith*.

1869. Panulirus echinatus, *Smith, Trans. Connecticut Acad.* ii. p. 20.

Five specimens were taken, two adult females, one with ova, and one immature female, one adult male and one immature male.

The specimens described by Smith were from Pernambuco.

PANULIRUS ORNATUS (*Fabr.*).

1798. Palinurus ornatus, *Fabricius, Ent. Syst. Suppl.* p. 400.
1837. Palinurus ornatus, *M.-Edwards, Hist. Nat. Crust.* ii. p. 296.
1867. Palinurus ornatus, *Heller, Reise Freg. Novara, Crust.* p. 99.

In 1872 v. Martens, in his paper "Ueber cubanische Crustaceen," Arch. f. Naturg. xxxviii. p. 128, recorded the occurrence on the eastern coasts of America of a *Palinurus*, which he questionably identified as *P. ornatus* (Oliv. ?), a species which appears to have its head-quarters in the Indo-Pacific Seas. From Fernando Noronha, Mr. Ridley obtained one specimen of a *Panulirus*, which I cannot separate by any important character from *P. ornatus* (Fabr.); and in addition to this specimen there is in the British Museum Collection one other from Panama, which is also, I believe, referable to *P. ornatus* (Fabr.). It will thus be seen that this form occurs in the Indo-Pacific Seas and upon the east and west coasts of America.

It is perhaps of interest to note that the spines upon the carapace and upon the peduncles of the antennæ appear to be somewhat sharper, and relatively longer, in the American individuals than they are in the Eastern individuals that I have had an opportunity of examining.

[Tolerably common, and collected from the rock-pools for food.—*H. N. R.*]

PANULIRUS INERMIS, n. sp.

Carapace somewhat flattened above, with sides nearly vertical. The right and left portions of the upper surface meeting in the middle line at a very obtuse angle. Carapace nearly smooth frontal spines considerably shorter than the eye-stalks, slightly incurved at the apices, armed above at the base with a single spine; one spine situated near the ocular margin of the carapace, one in the anterior third of the supero-lateral margin, and a third beneath the eye-stalk near the outer portion of the basal antennal segment.

Antennal peduncle about two thirds the length of the carapace; basal segment armed externally with a single spine on its anterior margin; second segment armed above with five spines, two forming a longitudinal series externally, three forming an oblique series internally; third segment armed above with ten short spines. Below, the three segments are smooth.

Antennular plate nearly horizontal, with rounded antero-external angles not armed with spines; the peduncle shorter than peduncle of antennæ; segments of peduncle not spined.

Epistoma with a straight unspined anterior margin.

The first and fifth pairs of limbs simple, unspined. (Second, third, and fourth pairs absent.)

Postero-external angles of the sternum prolonged into a sharp, long spine.

Abdominal tergites smooth, punctured, not marked with a transverse sulcus; inferiorly and laterally prolonged into a spine. The posterior margin of the last dorsal plate furnished with two long, sharp spines.

Proximal portion of telson furnished in the middle of its upper surface with two spines and with its posterior margin armed on each side with four spines.

Total length from anterior margin of carapace to posterior margin of telson 27 millim. Length of upper surface of carapace 11 millim.

One specimen.

Judging from its size, the specimen from which the above description has been taken is certainly immature. It, nevertheless, presents the characters of a true *Panulirus*, and differs from all the specimens of that genus that I have examined in the absence of spines from the basal plate of the antennulæ. Dredged in Water Bay. About 10 fathoms depth.

CARIDEA.

Family PALÆMONIDÆ.

Genus ALPHEUS (*Fabricius*).

1798. Alpheus, *Fabricius, Ent. Syst. Suppl.* p. 380.

1878. Alpheus, *Kingsley, Bull. U.S. Geol. Surv.* iv. p. 189.

ALPHEUS EDWARDSII (*Aud.*).

1809. Athanasus Edwardsii, *Audouin, Explic. planches de Savigny, Descript. de l'Egypte, Atlas,* pl. x. fig. 1.

1818. Alpheus heterochelis, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 243.

1884. Alpheus Edwardsii, *Miers, Rep. Crust. H.M.S. 'Alert,'* p. 284.

Twenty-nine specimens. This species is common in the warmer parts of the Atlantic, Pacific, and Indian Oceans, and in consequence of its wide range and of the variations to which individuals are subject it possesses a long list of synonyms. These synonyms may be found upon reference to the above cited work of Mr. E. J. Miers.

ALPHEUS MINOR, *Say*.

1818. Alpheus minus, *Say, Journ. Acad. Nat. Sci.* i. p. 245.

1837. Alpheus minus, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 356.

1878. Alpheus minus, *Kingsley, Bull. U.S. Geol. Geogr. Surv.* iv. p. 190.

One specimen.

This species occurs upon the east and west coasts of America. Kingsley records it from N. Carolina, Bermudas, Florida on the east, and from Pearl Island Bay (Panama) on the west.

ALPHEUS RIDLEYI, n. sp.

Carapace and abdominal tergites smooth; carapace furnished in front with a short pointed rostrum, which does not nearly reach to the second segment of the antennular peduncle; rostrum separated by depression from the ocular hoods, each of which is furnished with a spine projecting in front as far as the extremity of rostrum.

Antennular spine reaching nearly to the second segment of the peduncle, which is the longest of the three, the third being the shortest.

Antennal scale as long as antennal peduncle, longer than antennular peduncle; basal segment of antenna furnished beneath with a strong spine.

Terminal segment of external maxillipede hairy.

First pair of legs very unequal in size. Dactylus of larger hand closing vertically, with evenly rounded supero-anterior border, without accessory teeth; its greatest length equal to one half of the length of the superior margin of the manus. Anterior margin of the "thumb" on the inner side nearly vertical, forming an obtuse angle with the inclined superior margin. Superior and inferior margins of thumbs on the outer side nearly parallel: in front united by a distinct anterior border, which below curving forwards forms with the inferior border the tooth of the thumb, which does not project so far forwards as the anterior margin of the dactylus.

Upper margin of the manus with a very faint constriction in its anterior half; right and left sides smooth, without depressions; lower margin with a very faint depression in its anterior half; upper margin marked with sulcus, which in the middle of the hand curving downwards and backwards runs to the carpal joint. Carpus rounded above, not bearing a tooth; meros three-sided, flattened below, not bearing a tooth above in front. Smaller manus simple, without constrictions or depressions; dactylus, thumb, and upper margin of manus approximately equal in length; carpus furnished with a blunt tooth above, equal in size to the carpus of the larger manus; meros resembling the meros of the larger manus.

In the second pair of legs the first carpal segment is as long as the second and the third together; third about half the length of the second, equal in length to the fourth, shorter than the fifth, which itself is shorter than the second.

Meros and carpus of third and fourth pairs of legs not spined.

In size and form resembling *A. Edwardsii*, but differing from it in having the larger hand very lightly constricted above and below. Moreover, there is a large black spine on each side of the telson.

ALPHEUS PANAMENSIS, *Kingsley*.

1878. Alpheus panamensis, *Kingsley, Bull. U.S. Geol. Surv.* iv. p. 192.

Carapace smooth, furnished in front with a strong rostrum, which projects considerably beyond the spines of the orbital hoods, almost as far as the second segment of the antennular peduncle; separated by a depression from the ocular hoods, each of which is furnished with a small sharp spine.

Lower margin of hood continuous below the spine.

Antennular spine reaching slightly beyond the margin of the basal segment of the peduncle. Second segment of peduncle longer than the third, as long as the first.

Antennal scale and peduncle as long as each other, and slightly longer than the antennular peduncle. Basal segment of antenna furnished below with a strong sharp spine.

First pair of legs very unequal in size. Dactylus of larger hand closing vertically, its greatest length being more than half the length of the superior margin of the manus; without accessory teeth.

Anterior margin of the thumb on the inner side nearly vertical, meeting the inclined superior margin at an obtuse angle; less than half the length of the superior margin. Thumb on the outer side without a vertical anterior margin, the superior margin meeting the inferior at an acute angle and forming the tooth.

Manus smooth, without constrictions or depressions, longer than the carapace; superior and inferior margins nearly parallel. Carpus rounded above, not bearing a tooth. Meros three-sided, flattened below; superior margin produced in front into a blunt process.

Smaller manus simple; dactylus and thumb approximately equal in length to each other and to the manus.

Carpus furnished above on the inner side with a small projection. Meros resembling meros of larger limb, except that the front process is smaller.

In second pair of limbs the carpal segments are 1, 2 and 5, 3 and 4.

First segment almost as long as the second, third, and fourth together. Second segment a little shorter than the third and fourth together, these being approximately equal; fifth as long as the second.

Meros and carpus of third and fourth pairs of legs not spined. Dactyli of limbs not bifid.

One specimen. If I am right in referring this species to *Al. panamensis* of Kingsley, with the description of which it agrees well, it is of interest to note that it occurs upon the eastern and western coasts of America. Mr. Kingsley described his specimens from Panama and Acajutla.

ALPHEUS OBESO-MANUS, *Dana.*

1852. Alpheus obesomanus, *Dana, U.S. Expl. Exped., Crustacea,* i. p. 547, pl. xxxiv. fig. 7.

Carapace smooth, furnished in front with a short rostrum, which does not reach nearly so far as the anterior border of the first segment of the antennula, but a little beyond the ocular hoods, from which it is separated on each side by a deep sulcus. Ocular hoods not spined, but slightly produced in front.

Antennular spine short, not reaching to the front margin of the first segment of the peduncle of the antennula. Second segment of peduncle the longest of the three, the third the shortest.

Antennal scale as long as peduncle of antennula, shorter than peduncle of antenna. Basal segment of antenna without a spine.

Legs of first pair very unequal in size. Dactylus of larger manus closing horizontally, about half as long as the upper margin of the manus. The superior (outer) margin of the thumb furnished with two large teeth, of which the posterior is smaller, more slender, and with a blunt apex, the anterior having a rounded margin.

Dactylus short, rounded. Dactylus and thumb very hairy.

The manus simple, cylindrical, without constrictions or depressions, as long as the carapace and the two proximal segments of the antennular peduncle. Carpus deep from above downwards, rounded above, and not furnished with a tooth. Meros deep from above downwards, three-sided, flattened below; upper margin produced in front into a conspicuous process.

Smaller hand somewhat resembling the larger, except that it is less twisted, less cylindrical, with dactylus and thumb straighter and relatively longer. Carpus less deep, and furnished on the upper inner margin with a distinct nodule. Meros less deep, with upper tooth scarcely conspicuous.

In the second pair of legs the carpals are 2, 5, 4 and 3 and 1. The first, third, and fourth segments approximately equal in length, the fifth a little longer; the second as long as the third, fourth, and fifth together. In the third and fourth pairs of legs the carpus and meros are below furnished in front with a strong spur.

Ten specimens. So far as I know, this species has not been hitherto recorded from the American coasts. Its occurrence has been mentioned in the Samoan Islands (*Kingsley*), Fiji Islands (*Dana*, *Miers*), and in Mauritius (*Richters*).

Alpheus rostratipes, n. sp.

Carapace smooth, anterior margin crescentically excavated, the sides of the excavation being formed by the ocular hoods, which are anteriorly produced but not furnished with spines, and not separated from the rostrum by a depression. Rostrum springing from the centre of the excavation, pointed, short, projecting slightly in front of the ocular hoods, but not reaching the anterior margin of the first segment of the antennular peduncle. Antennular spine reaching to the middle of the second segment of peduncle. Segments of peduncle short, approximately equal in length; second segment furnished externally with a small spine on its anterior margin. Antennal scale as long as the antennular peduncle, much shorter than the antennal peduncle. Basal segment of antenna furnished laterally with a conspicuous spine.

One of the legs of the first pair absent. The dactylus of the remaining one (the smaller ?) closing vertically; long, longer than the manus, curved, pointed blade-like, when closed; crossing the thumb. Thumb almost as long as dactylus, and at the base twice as thick, gradually tapering to a sharp, upturned point, meeting manus at an obtuse angle. Manus elliptical, simple, without constrictions or depressions, furnished close to the dactylar joint on each side with two blunt teeth, those on the outer side being obscurely marked. Carpus furnished on its inner side with a small blunt tooth. Meros three-sided, flattened below, superior margin produced in front into a conspicuous projection. Carpals of the second pair of legs becoming progressively shorter in the following order:—1, 5, 2, 3, 4.

Carpus and meros of third and fourth pairs not furnished below with a spine. Dactylus of fourth pair bifid, of third pair absent.

Alpheus, sp.

(Too mutilated for identification.)

Carapace furnished in front with a small pointed rostrum, which projects slightly in front of the ocular hoods, but not nearly to the anterior margin of the basal segment of the peduncle of the antennula; ocular hoods rounded and not spined. Basal spine of antennula reaching to the anterior margin of the basal peduncular segment. Second segment of peduncle longer than the third, approximately equal to the first. Antennal scale longer than the antennular peduncle, shorter than the peduncle of the antenna. Basal segment of antenna not provided with a spine.

Legs of first pair absent.

Carpals of the second pair differing upon the two sides, on the right side the fifth segment being longer than the second, and on the left side shorter. In each case the first is the longest, and the third and fourth the shortest.

Carpus and meros of third and fourth pairs not produced below into a tooth.

Dactyli of third, fourth, and fifth pairs simple.

ALPHEUS, sp.

(Too mutilated for identification.)

Carapace furnished in front with a short rostrum, which does not project as far as the middle of the first segment of the peduncle of the antennula, and is separated by a depression on each side from the ocular hoods. Each ocular hood furnished with a spine. Antennular spine short, sharp, not reaching to the front margin of the basal segment of the peduncle. Second segment of the peduncle the longest, the first and third approximately equal in length. Antennal scale as long as antennal peduncle, a little longer than antennular peduncle. Basal segment of antenna furnished with a long, sharp spine, which projects as far as the middle of the second segment of the antennular peduncle.

First and second pairs of legs absent. Carpus and meros of third and fourth pairs not produced below in front into a strong process. Dactyli of third, fourth, and fifth pairs bifid.

[The *Alphei* were taken in numbers from the holes in which they hid by breaking up the coral-reef.—*H. N. R.*]

Family PENÆIDÆ.

Genus STENOPUSCULUS, *Richters.*

1880. Stenopusculus, *Richters, Beiträge zur Meeresfauna der Insel Mauritius und der Seychellen, von Möbius, Richters und v. Martens,* p. 167.

STENOPUSCULUS SPINOSUS, n. sp.

? Syn. Stenopusculus crassimanus, *Richters, t. c.* p. 168, pl. xviii. figs. 27–29.

Upper portion of cephalothorax sparsely spined; spines in front of the cervical suture larger than those behind it. Posterior margin of the cervical suture furnished above with 4 or 5 spines, and laterally with 3 or 4 larger ones. Postero-lateral portions of cephalothorax almost smooth; antero-lateral portions beset with spines arranged more or less in longitudinal series. Anterior marginal excavation adjoining the basal antennal segment armed with four spines.

Cephalothorax furnished in front with a pointed rostrum, which starts upon the anterior half of the cephalic portion of the carapace and reaches almost as far forwards as the front margin of the antennular peduncle. Upon each side the rostrum extends horizontally over the basal portion of the eye. Furnished above with eleven teeth, of which five are larger than the rest, and below near the apex with one tooth.

Proximal portion of antennular peduncle furnished externally with a strong curved spine; upper surface of peduncle with three spines; under surface with four on the inner margin and one on the outer margin.

Basal segment of antennal peduncle furnished above with two spines externally, and with a laminate process internally; second segment covered by the basal segment, furnished below with three spines; third segment with one spine externally and with three internally. External margin of antennal scale with five or six fine teeth, internal margin fringed; antennal scale somewhat triangular, laminate, projecting slightly in advance of the antennal peduncle, which is approximately as long as the antennular peduncle.

Epistome furnished with four strong teeth.

Ischial segment of external maxillipede furnished distally with three spines externally, and with one spine internally; meral segment externally with three strong spines. Internal margin of all the segments clothed with hairs.

Segments of first and second pairs of legs simple, more or less cylindrical, unspined.

Meropodite of third pair of legs cylindrical, spined, with some larger sharp spines near the distal extremity on the inner surface. Carpopodite rounded below, flattened and hollowed above; the hollowed portion with a few small spines, the rest thickly spined; spines on the outer surface larger.

Inner surface of the hand covered with small tubercles; outer surface almost smooth, with a few small tubercles near the upper and under margins. Upper margin compressed into a serrated keel; under margin also serrated. Anterior margin of hand nearly at right angles to the axis of the pollex. Pollex upturned at the apex, furnished on its occludent margin with a tooth which closes behind the tooth of the dactylopodite. Upper margin of dactylopodite serrated.

Fourth and fifth pairs of limbs resembling each other in being slender and elongated, in having the propodite furnished below with a series of fine spines and consisting of three segments, and in having the dactylopodite bifid. But whereas the propodite of the fourth pair consists of five segments, the propodite of the fifth pair consists of but three. The number of divisions of these segments, however, appears to vary upon the two sides.

Abdominal tergites smooth above; lateral portions narrowed, somewhat pointed, and with margins more or less spined.

The outer and inner lamellæ of appendages of the sixth abdominal somite with a median longitudinal crest, serrate exterior margin, and fringed inner margin. Outer margin of inner lamella furnished below with a stronger tooth.

Telson with converging lateral margins, rounded posterior margin; each lateral margin furnished with a central tooth; posterior margin furnished with three teeth, one on each side and one in the middle. Upper surface of telson marked with two longitudinal crests, each of which bears three spines arranged longitudinally; the depression between the crests furnished proximally with four spines in two longitudinal series. Base of telson bearing on each side one marginal spine.

Two specimens.

Length from apex of rostrum to posterior margin of telson 13 millim.; total length of upper surface of carapace (including rostrum) 5½ millim.; length of manus and pollex of third pair of feet 8 millim.

This species seems to differ from *St. crassimanus*, Richters, in the possession of a greater number of teeth upon the rostrum and in the absence of a crest upon the abdominal tergites.

The three species which hitherto have, so far as I am aware, composed the genus were taken at Touquets (Mauritius).

STOMATOPODA.

Genus Gonodactylus, *Latreille.*

1825. Gonodactylus, *Latreille, Encycl. Méth. Hist. Nat.* x. p. 473.
1837. Gonodactylus, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 528.
1880. Gonodactylus, *Miers, Ann. Mag. Nat. Hist.* v. p. 115.
1886. Gonodactylus, *Brooks, Stomatopoda of H.M.S. 'Challenger,'* p. 55.

Gonodactylus chiragra (*Fabricius*).

1793. Squilla chiragra, *Fabricius, Ent. Syst.* ii. p. 513.
1880. Gonodactylus chiragra, *Miers, Ann. May. Nat. Hist.* v. p. 115.

Fourteen specimens of this widely distributed species were brought back. In the coral-reef.

MYRIOPODA.

By R. I. Pocock,
Assistant in the Zoological Department, British Museum.

The island does not seem to be rich in members of this group, since four species only were obtained in it. Two of these appear to be new to science, one being referable to the genus *Geophilus*, the other to the genus *Spirobolus*. The others are the two widespread tropical species, *Scolopendra morsitans* (Linn.) and *Paradesmus gracilis* (C. Koch).

CHILOPODA.

Scolopendra morsitans (*Linn.*), emend., *Kohlrausch, Arch. f. Naturg.* 1881, p. 104.

Thirteen specimens were taken. Common under dung and stones, at the east end of the main island and base of Peak Garden and elsewhere. The bite is about as bad as a wasp's sting.

Geophilus Ridleyi, n. sp.

Length 44 millim. Width about 1 millim. Posterior end of the body slightly more slender than the anterior.

Ochraceous, head-plate slightly darker.

Number of pairs of legs 73 (in the female).

Antennæ hirsute, the distal end more so than the proximal. Segments of the proximal half cylindrical, those of the distal half narrowed proximally; apical segment as long as the two preceding segments.

Head-plate with straight anterior margin, rounded lateral margins, and concave posterior margin; sparsely clothed with hairs, and almost destitute of punctures.

Frontal lamina coalesced with rest of head-plate.

Basal lamina about twice as wide as long, with abruptly converging lateral margins and concave anterior margin. The prebasal lamina visible in the space left between the concave posterior border of the head-plate and the concave anterior border of the basal lamina.

Maxillary sternite wider than long; its anterior margin slightly excavated, but scarcely bidentate.

Maxillary feet largely visible from above, and projecting slightly in front of the head-plate; the segments on the inner side furnished with hairs but not armed with teeth.

Dorsal plates conspicuously bisulcated.

Ventral pores occupying a circular area in the posterior half of the sternites.

Legs sparsely clothed with longish hairs.

The anal tergite wide, but not covering the pleuræ; with rounded postero-lateral angles, staight posterior margin, and lateral margins slightly converging behind.

Anal pleuræ smooth, not furnished with punctures.

Anal sternite very wide at the base, gently converging lateral borders, rounded posterior angles and straight posterior margin.

Anal pores conspicuous. Anal legs broken.

A single female specimen, found under a stone in the Sapate.

This species appears to be closely allied to *G. occidentalis*, Meinert (Proc. Amer. Phil. Soc. xxiii. p. 220), from San Francisco; but differs in the absence of teeth from the segments of the maxillary feet, and in the absence of pores from the anal pleuræ.

DIPLOPODA.

PARADESMUS GRACILIS (*C. Koch*).

Two female specimens.

For the synonymy and an excellent description of this species, see Dr. Robert Latzel's 'Die Myriopoden der öst.-ungar. Monarchie,' ii. p. 162.

This very wide-spread form occurs in the East and West Indies and Brazil.

It has been introduced, in connection with tropical plants, into Europe; and I have examined many specimens of all ages, which were captured in the conservatory of Mr. Alfred O. Walker at Chester, and in the orchid-houses of Mr. Herbert Druce at St. John's Wood.

[It was very common in the garden.—*H. N. R.*]

SPIROBOLUS (s. s.) NORONHENSIS, n. sp.

Length about 30 millim. Number of somites 37.

Colour deep slate-grey or almost black; anterior half of each somite (the first and last excepted) adorned above and below on each side with a single reddish spot. Legs and labrum reddish.

Distal portion of the head-plate furnished with a faint median longitudinal impression, upon each side of which, near the margin of the labrum, are two setiferous punctures, one near the middle line, the other near the external portion of the labral excavation. Distal segments of antennæ pilose.

First dorsal plate smooth, without striæ; laterally, where the anterior and posterior margins pass into one another, evenly rounded; furnished with a fine sulcus which runs from near the ocular region of the head-plate, close to the antero-inferior margin, and terminates at the postero-inferior margin.

Foramina repugnatoria situated, somewhat dorsally, in the posterior portion of the somites. Posterior portion of each somite smooth above; anterior portion marked with transverse striæ; inferior and lateral portions marked with numerous longitudinal striæ. Somites not furnished with the '*scobina*.'

Posterior somite smooth; produced behind into a blunt rounded process, which extends slightly beyond the margins of the anal valves. Anal valves with margins not compressed. Margin of subanal plate rounded.

The right and left moieties of the male copulatory apparatus held together in front by a triangular plate. Below this plate terminates in a rounded apex, which extends as far as the inferior margins of the halves of the apparatus. Each upper angle of this plate produced laterally and upwards into a relatively slender bar, which curves round the superior portion of the anterior lamina of its side. Each anterior lamina simple, more or less spatulate, with evenly rounded external margin and slightly concave inferior margin. Viewed from the side, seen to be considerably thicker above than below. Posterior lamina irregularly quadrate, with even outer and inner margins which below slightly converge; the inner margin distally produced into a conspicuous rounded, noduliform process, which projects slightly below the level of the concave inferior margin of the anterior lamina, and is consequently visible when the copulatory apparatus in its entirety is viewed from the front. Above and externally, the interspace between the anterior and posterior laminæ is occupied by a small sclerite, with even margins and rounded below, which, dilating above, forms the posterior margin of the superior aperture of the sheath, of which the walls are composed of the four laminæ just described, and which contains the protrusible portion of the copulatory apparatus. This protrusible portion is articulated at its proximal end to a simple rod, which is itself articulated to the upper extremity of the anterior lamina. Protrusible portion curved almost through the arc of a semicircle, and composed of two segments. The distal segment about twice as long as the proximal, membranous and hollow behind, chitinous in front, with its posterior portion armed with a simple small process.

A dozen specimens found under stones in the Banana plantations at the base of the Peak.

In many points this species appears to resemble *Sp. paraensis* (Humb. & Sauss.). But the absence of all knowledge of the form of the copulatory apparatus of that species makes it impossible for me to refer these specimens to it.

INSECTA, excepting Coleoptera.

By W. F. Kirby, F.L.S., F.E.S.,
Assistant in the Zoological Department, British Museum.

Notwithstanding the comparatively large proportion of new species in the present collection, it would be a mistake to suppose that very many will ultimately prove to be confined to the island of Fernando Noronha. The greater part belong to Orders of insects which are comparatively little collected or studied, and among which large numbers of conspicuous species remain to be described, even from the best explored tropical countries.

The few Lepidoptera in the collection were taken at an unfavourable season of the year, and many are worn specimens. They exhibit more decidedly West-Indian affinities than might have been expected.

I prefix to the paper a full list of all the species obtained, except a few which were worn, immature, or too scantily represented for satisfactory identification. They are arranged systematically under the orders and principal families to which they belong.

List of Species obtained.

Order **ORTHOPTERA.**

Forficulidæ.

1. Pygidicrana notigera, *Stål.*
2. Labidura riparia, *Pall.*
3. Anisolabis janeirensis, *Dohrn.*
4. —— Antoni, *Dohrn.*

Blattidæ.

5. Phyllodromia poststriga, *Walk.*
6. Ischnoptera lucida, *Walk.*
7. Periplaneta americana, *Linn.*
8. Blatta incommoda, n. sp.
9. Leucophæa surinamensis, *Linn.*
10. Euthyrrapha pacifica, *Coq.*

Gryllidæ.

11. Scapteriscus abbreviatus, *Scudd.*
12. Gryllus assimilis, *Fabr.*
13. —— forticeps, *Sauss.*
14. Œcanthus (?) pallidocinctus, n. sp.

Phanopteridæ.

15. Conocephalus vernalis, n. sp.
    —— ——, var. n. frater.
16. Œcella (n. g.) furcifera, n. sp.
17. Meroncidius viridinervis, n. sp.

Locustidæ.

18. Stenopola dorsalis, *Thunb.*

Order **NEUROPTERA.**

ODONATA.

Libellulidæ.

19. Pantala flavescens, *Fabr.*
20. Tramea basalis, *Burm.*

Order **HYMENOPTERA.**

TEREBRANTIA.

Entomophaga.

Chalcididæ.

21. Blastophaga obscura, n. sp.
22. Ganosoma dispar, n. sp.

Evaniidæ.

23. Evania lævigata, *Latr.*

ACULEATA.

Heterogyna.

Formicidæ.

24. Camponotus bimaculatus, *Smith.*
25. Pheidole omnivora, n. sp.

Fossores.

Bembicidæ.

26. Monedula signata, *Linn.*

Pompilidæ.

27. Pompilus nesophilus, n. sp.

Larridæ.

28. Tachytes inconspicuus, n. sp.

Diploptera.

Vespidæ.

29. Polistes Ridleyi, n. sp.

Anthophila.

Andrenidæ.

30. Halictus lævipyga, n. sp.
31. —— alternipes, n. sp.
32. —— atripyga, n. sp.

Order **LEPIDOPTERA.**

Rhopalocera.

Lycænidæ.

33. Tarucus Hanno, *Stoll.*

Heterocera.

Noctuæ.

34. Heliothis armiger, *Hübn.*
35. Anomis (?) dispartita, *Walk.*
36. Anthophila flammicincta, *Walk.*
37. Bolina bivittata, *Walk.*
38. Thermesia gemmatalis, *Hübn.*

Geometres.

39. Nemoria denticularia, *Walk.*
40. Acidalia Fara, n. sp.

Pyrales.

41. Pyralis manihotalis, *Guén.*
42. Samea castellalis, *Guén.*
43. Hymenia perspectalis, *Hübn.*
44. Phakellura hyalinata, *Linn.*
45. Margaronia jairusalis, *Walk.*
46. Acharana phæopteralis, *Guén.*
47. Pachyzancla detritalis, *Guén.*
48. Opsibotys flavidissimalis, *Grote.*

Crambi.

Phycididæ.

49. Mella zinckenella, *Treitschke.*

Order **HEMIPTERA**.

HETEROPTERA.

PENTATOMIDÆ.

50. Pentatoma testacea, *Dall.*

LYGÆIDÆ.

51. Lygæus rufoculis, n. sp.
52. Heræus variegatus, n. sp.
53. Ligyrocoris balteatus, *Stål.*
54. —— bipunctatus, n. sp.

VELIIDÆ.

55. Rhagovelia incerta, n. sp.

Order **DIPTERA**.

DOLICHOPODIDÆ.

56. Psilopus metallifer, *Walk.*

SYRPHIDÆ.

57. Temnocera vesiculosa, *Fabr.*

MUSCIDÆ.

58. Sarcophaga calida, *Wied.*

Description of New Species and Special Notes.

1. PYGIDICRANA NOTIGERA, *Stål.*

Pygidicrana notigera, *Stål, Eugenie's Resa, Zool. Ins.* p. 299 (1858).

Flew into light.

2. LABIDURA RIPARIA (*Pall.*).

Forficula riparia, *Pall. Reise,* ii. Anhang, p. 30 (1773).

A cosmopolitan species.

3. ANISOLABIS JANEIRENSIS (*Dohrn*).

Forcinella janeirensis, *Dohrn, Stett. ent. Zeit.* xxv. p. 285.

4. ANISOLABIS ANTONI (*Dohrn*).

Forcinella Antoni, *Dohrn, Stett. ent. Zeit.* xxv. p. 289 (1864).

These earwigs were common under stones in the main island.

5. PHYLLODROMIA POSTSTRIGA (*Walk.*).

Blatta poststriga, *Walk. Cat. Blatt.* p. 99, n. 69 (1868).

The locality of the typical specimen is unknown.

6. ISCHNOPTERA LUCIDA, *Walk.*

Ischnoptera lucida, *Walk. Cat. Blatt.* p. 120, n. 39 (1868).

A single immature specimen, probably belonging to this species. Taken under stones, base of Peak.

7. PERIPLANETA AMERICANA (*Linn.*).

Blatta americana, *Linn. Syst. Nat.* i. p. 424, n. 4 (1758).

A cosmopolitan species. Common and introduced.

8. Blatta incommoda, n. sp.

Long. corp. 11½ millim.

Female. Ferruginous brown; the thorax and sides of the abdomen varied with black; legs and costal margin of the tegmina testaceous. Pronotum rather long, moderately convex, the sides converging in front, the hinder angles rounded off, and the hind border convex. Tegmina broad, covering the whole base of the abdomen, but ceasing at about two fifths of its length.

Similar to *B. orientalis*, Linn., but much smaller, the tegmina much larger, and the pronotum longer.

9. Leucophæa surinamensis (*Linn.*).

Blatta surinamensis, *Linn. Syst. Nat.* i. p. 424, n. 3 (1758).

A cosmopolitan species. Under stones, base of Peak.

10. Euthyrrapha pacifica (*Coq.*).

Blatta pacifica, *Coqueb. Illustr. Ins.* i. p. 91, pl. xxi. f. 1 (1801).

11. Scapteriscus abbreviatus, *Scudd.*

Scapteriscus abbreviatus, *Scudd. Mem. Peabody Acad. Sci.* i. p. 14, t. i. ff. 8, 20 (1869).

Larvæ found in burrows in the sand under a *Conferva* (*Enteromorpha*), in salt water, on the shore of San Antonio Bay, a little above high water. Perfect insect in and about the yards of the house.

12. Gryllus assimilis (*Fabr.*).

Acheta assimilis, *Fabr. Syst. Ent.* p. 280, n. 3 (1775).

A species widely distributed in America. This is the black cricket mentioned by Webster and other visitors to the island. It is very common in the central district on the paths, and makes a great noise, especially about 4 o'clock in the afternoon.

13. Gryllus forticeps, *Sauss.*

Gryllus forticeps, *Sauss. Miss. Sci. Mex.* vi. p. 407 (1870).

14. Œcanthus (?) pallidocinctus, n. sp.

Long. corp. 13 millim.

Male. Reddish brown, abdomen, hind knees, and hind tarsi darker; head rather flattened, the palpi and the outside of the scape of the long and slender antennæ towards the base whitish. Pronotum longer than broad, sides subparallel, more shining and paler on the lower lateral border than above; elytra brown, reticulated with darker nervures, about two fifths as long as the abdomen, which is rather long and cylindrical, the incisions conspicuously pale; cerci broken, but the remaining portions are bordered on each side with very long and fine hairs. Legs short and stout, and slightly compressed; all the femora enlarged, the middle ones least so; hind tibiæ spined from the base, with 3 large terminal spines on each side, and 3 or 4 larger spines alternating with smaller ones beyond the middle; first joint of tarsi with 2 small and 1 large spine on each side.

Probably belongs to a new genus of *Œcanthidæ*, but has a superficial resemblance to *Gryllodes*.

15. CONOCEPHALUS VERNALIS, n. sp.

Exp. al. circa 78 millim.

Bright grass-green; wings hyaline, with bright green nervures; fastigium short, obtusely rounded, as in *C. triops*, Linn.; four front femora unarmed. Male with face, antennæ, eyes, and the whole of the fastigium whitish; tips of mandibles and palpi red; tibiæ paler than the ground-colour; auditory apparatus and tarsi beneath blackish; tegmina yellowish along the costa, a buff streak at the base above the subcostal nervure, and a white basal streak on the left side above the median nervure. Female much less varied with white; labrum white, mandibles more yellowish, auditory apparatus and tarsi whitish, the latter brown below; ovipositor a little longer than the abdomen, extending far beyond the knees, but shorter than the closed wings; ovipositor paler towards the extremity, and slightly veined with reddish, the extreme tips of the blades black.

This grasshopper was very common everywhere in the Main and Rat Island. It makes a great noise at night. The brown form, which flew about with it, was not so common.

Var. FRATER.

Exp. al. 75–83 millim.

Brown; the thorax apparently rather longer and narrower, an effect which is caused by an indistinct pale or blackish line on each side; frequently a pale streak behind each eye; mandibles varied with pale reddish, the extreme tips black; tegmina greyish brown, often with dark speckles above and below the principal nervures and on the costa beyond the middle (similar speckles are visible on one of the green specimens); wings hyaline, with greyish-brown nervures.

Genus ŒCELLA, n. gen.

Affinities doubtful; nearest to *Bargilis* in the structure of the legs, but more nearly approaching *Elimæa* in neuration.

Vertex slightly convex, shaped nearly like an equilateral triangle when viewed from above, the fastigium projecting about as far as the scapes of the antennæ, when the latter are recurved. Eyes large, round, prominent. Antennæ slender, filiform, at least as long as the tegmina. Pronotum above flat, oblong, slightly narrowed in front and rounded behind, excised laterally at the base of the wings. Tegmina rather narrow, especially at the tips, but hardly pointed; shorter than the wings, the drums of the male triangular, vitreous, nearly alike on both tegmina. Front legs moderately stout, unarmed; the tibiæ much swollen at the base to receive the linear foramina, which are well marked on both sides. Tarsi of all the legs similar, of nearly equal size, and about as long as broad, the second joint lobate, the last very slender, and nearly as long as the two preceding joints together. Middle tibiæ with a few very short and small spines towards the extremity. Hind legs long and slender, the basal half of the femora moderately thickened, furrowed on the side, and carinated below; tibiæ with a double row of short and slender spines, and with two small spines at the tip. Cerci of the male nearly as long as the short abdomen, with long terminal forks, the longest slender and almost sickle-shaped at the tip; subgenital laminæ short, concave at the extremity. Ovipositor nearly as long as the abdomen, moderately broad, strongly compressed, turned upwards, and pointed at the tip.

16. ŒCELLA FURCIFERA, n. sp.

Exp. tegm. 38 millim.; exp. al. 42 millim.

Head, thorax, tegmina, tips and veins of wings, and greater part of legs grass-green; antennæ and tibiæ, abdomen and appendages yellowish, a yellowish line on each side of the pronotum above; wings hyaline.

Hab. Pernambuco and Fernando Noronha. In all the specimens from the latter locality the green colour has more or less faded to yellowish brown. When fresh this insect is bright green. It was common on Main Island, and especially on Rat Island.

17. MERONCIDIUS VIRIDINERVIS, n. sp.

Exp. al. 65 millim.; long. corp. 38 millim.

Male. Brown, head smooth; labrum greenish; mandibles black, except at the base; a depressed circle surrounding the space of the antennæ, and the fastigium projecting in a spoon-shape between them; scape pointed; flagellum broken: the basal joints varied with lighter and darker brown; thorax strongly granulated, a little speckled with black, and much raised behind, where it assumes a slight greenish tint; tegmina brown, minutely reticulated and spotted with dark brown, chiefly above and below the nervures; longitudinal nervures mostly green; in the costal area the nervures are blackish towards the base, where they anastomose a little; on the disk the transverse nervures are brown or indistinctly green; inner margin with alternate darker and paler spaces: wings smoky hyaline, with reddish-brown longitudinal and brown transverse nervures; hind margins damaged, but probably browner than the rest of the wing; legs indistinctly mottled; spines of femora mostly black on the inner sides, hind femora with a black basal streak on the outside.

Somewhat resembles *M. indistinctus*, Walk., but the wings are shorter.

A single specimen on a tree in the Sapate.

18. STENOPOLA DORSALIS (*Thunb.*).

Truxalis dorsalis, *Thunb. Nov. Acta Upsal.* ix. p. 80 (1827).
Stenopola dorsalis, *Stål, Recensio Orth.* i. p. 83 (1873).

The hind legs have not been described; they are reddish brown, the middle of the femora being black on both surfaces, the striations more or less marked with paler. The hind tibiæ are armed, except on the basal third, with a double row of moderately long and pointed spines, the intermediate space above is clothed with long fine white hairs, and there is a row of much shorter white hairs on the under surface also. The sides and under surface of the hind tibiæ are generally dark green or blackish; at the tip there are two short spines on the outside, and two long ones on the inside. There are apparently only three joints to the hind tarsi: the first is three times as long as broad, but is broad and flattened; the second is much narrower, half as long again as broad, and produced into a long tooth at the extremity beneath, and the terminal joint is very slender at the base, gradually enlarging to the pulvillus, and about as long as the two preceding joints together.

The species appears to be common, and differs considerably in size, the tegmina expanding from 30–40 millim., and the body measuring from 18–20 millim. in length.

On both Main and Rat islands, but especially common on the latter.

19. PANTALA FLAVESCENS (*Fabr.*).

Libellula flavescens, *Fabr. Ent. Syst. Suppl.* p. 285 (1798).

Distribution. World-wide.

Very common everywhere on Main Island. The larvæ living in puddles in the central district.

20. TRAMEA BASALIS (*Burm.*).

Libellula basalis, *Burm. Handb. Ent.* ii. p. 852, n. 25 (1839).

Less common than the preceding. The abdomen when fresh is dark crimson-red. A well-known South-American species.

21. BLASTOPHAGA OBSCURA, n. sp.

Male. Long. corp. 2 millim.

Brown or yellowish brown, smooth, except a few short hairs on the tarsi. Front tarsi apparently 3-jointed, middle and hind tarsi 5-jointed; tarsal claws very strong, and front and hind tibiæ ending in short strong spines.

This species resembles the description of *B. brasiliensis*, Mayr, from Blumenau, but is considerably larger. I think it useless to give a detailed description, for which a larger series, including both sexes, and preserved in different ways, would be desirable. The locality will probably serve to fix the species, especially as true *Blastophaga* does not appear to be well represented in America.

22. GANOSOMA DISPAR, n. sp.

Male. Long. corp. 1½ millim.

Yellow, smooth; head forming a long oval, broad behind, gradually narrowed in front, antennæ inserted widely apart; legs of nearly equal size and structure, femora slightly thickened; tibiæ spinose on the outer edge, and terminating in a coronet of short spines, none of which are conspicuously longer than the rest; first joint of the tarsi longer than thick; abdomen long, tapering.

Differs from *Ganosoma attenuatum*, Mayr (♂), in not being depressed, and (perhaps) in the long abdomen; and from *Tetragonaspis gracilicornis*, Mayr (♀), in the much shorter joints of the antennæ.

Female. Long. corp. 2 millim.; ovipositor 4½ millim.

Tawny-yellow, with a slight greenish-coppery reflexion (colours perhaps altered by spirit); antennæ 12-jointed, serrated and set with very short hairs; brown, except the two basal joints; scape as long as the three following joints, second joint rather longer than the fourth, third (annulus) very small, fifth and following gradually smaller, the last three joints forming a club; ovipositor more than twice as long as the body; veins of the wings of nearly uniform thickness; ulna as long as the pterostigma, hardly curved or thickened, metacarpus about as long as the radius. Head and thorax finely rugose. Legs yellow, the femora slightly thickened.

Appears to approach most nearly *Tetragonaspis* * *flavicollis*, Mayr, but that species has two annuli (ring-joints) to the antennæ. Except in the structure of the antennæ, the single specimen before me much resembles the figure of *T. gracilicornis*, Mayr, but the latter species has longer hairs on the antennæ, and the terminal joints do not form a club, to say nothing of other differences.

23. EVANIA LÆVIGATA, *Latr.*

Evania lævigata, *Latr. Gen. Crust. Ins.* iii. p. 251 (1807).

A cosmopolitan species. The larvæ of this genus are parasitic in the egg-capsules of Blattidæ.

A single specimen taken in a house at Sambaquichaba. It is very common in Pernambuco.

24. CAMPONOTUS BIMACULATUS (*Smith*).

Formica bimaculata, *Smith, Cat. Hym. B. M.* vi. p. 50, n. 171 (1858).

Six specimens, all small workers. The species is new to the Museum collection. Smith described it from St. Vincent's. Roger (Berl. ent. Zeitschr. vi. p. 285, 1862) identifies this species with *Formica ruficeps*, Fabr. (Syst. Piez. p. 404, n. 32); but I am not satisfied that this is correct, as Fabricius does not mention the conspicuous pale spots on the second segment of the abdomen. In the small workers the head is mostly black;

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* This genus proved to be the female of *Ganosoma*.

in the large workers it is red. Dr. Mayr records this species from New Granada, and it is probably widely distributed in South America.

Under the wood of a Burra tree in the Sapate.

25. PHEIDOLE OMNIVORA, n. sp.

Soldier 4½ millim.; worker 2½–3 millim. in length.

Soldier red, shining (abdomen darker), sparingly covered with raised white hairs. Head, without the mandibles, about as broad as long, finely and sparingly longitudinally striated above and in the middle, where it is depressed, behind; sides gradually rounded behind the eyes. Mandibles very broad, hardly punctured, blackish at the base and tips. Scape of the antennæ straight, gradually thickened beyond the middle, nearly one third of the length of the antennæ. Second joint about three times as long as broad, joints 3–9 very slightly longer than broad, joint 10 much thicker and twice as long as broad, joint 11 rather shorter and thicker, and joint 12 forming a long pointed cone; the hair on the antennæ is thicker and closer than on any other part of the body. Mesonotum with a hump on each side above, and finely punctured above; metanotum, which is armed with two strong spines, more closely; first node of the petiole with the spine somewhat truncated at the extremity; second node fully twice as broad as the first, and with strongly projecting lateral angles; abdomen finely punctured at the base.

Worker similar, but smaller and generally darker, the antennæ lighter; the scape nearly as long as the remainder of the antennæ, slightly curved, but hardly thickened, and the terminal joint thicker in proportion and less pointed than in the soldier. The spines on the metanotum and on the first node of the petiole are much shorter, and the projecting sides of the second node are rounded off.

This species much resembles *Pheidole pusilla*, Heer, in size and general appearance, but differs widely in structure.

This was exceedingly abundant in the houses, making nests in the earth between the bricks of the floor. It is very destructive. devouring all kinds of food, and even ate up the insects we captured, in the chip-boxes.

26. Monedula signata (*Linn.*).

Vespa signata, *Linn. Syst Nat.* ed. x. i. p. 574, n. 14 (1758).

A common South-American species.

Very common on the sand-hills, where it makes its burrow.

27. Pompilus nesophilus, n. sp.

Long. corp. 10 millim.; exp. al. 15 millim.

Female. Dull black, first three segments of abdomen, the sides of the fourth, and the under surface of the hind tibiæ red. Wings smoky, a little lighter and subhyaline on the hind wings and towards the base of the fore wings.

Head large, eyes hardly extending to the base of the jaws, face rather more strongly punctured than the vertex; clypeus short, slightly emarginate; labrum short, transverse; eyes nearly parallel, front ocellus forming the apex of a rectangle with the hinder ocelli, the two latter rather wider apart than the space between these ocelli and the eyes; second joint of the antennæ half as long again as the third. Pronotum falling in front to the neck in a short rounded curve, rather broader than the meso- or metanotum; the metanotum is furnished with a small prominence on each side near the base.

Second and third cubital cells of nearly equal size, the second recurrent nervure striking the third cubital cell in the middle.

Spines of the legs as usual.

Much resembles *P. sobrinus*, Blanch., a Chilian species, in which, however, the thorax is verdigris-green above, instead of black.

Taken flying over paths in the centre of the island, not common and difficult to catch.

28. Tachytes inconspicuus, n. sp.

Long. corp. 6–8 millim.

Black, clothed with a very fine silvery pile (that on the upper part of the face with a slight golden appearance in certain lights), otherwise most conspicuous on the sides of the abdomen, towards the extremities of the segments; thorax and scutellum shining, with very numerous small punctures, not very close together; metathorax rugosely-punctate; tegulæ testaceous; wings clear hyaline, with a strong violet iridescence; nervures dark brown.

Closely allied to *T. iridipennis*, Smith, from Ega, but in that species the thorax is longitudinally striated, and the tips of the tarsi are ferruginous.

29. Polistes Ridleyi, n. sp.

Long. corp. 15–16 millim.; exp. al. 26–20 millim.

Worker. Varied with ferruginous red, dark brown, black, and yellow; clothed with very fine silky pubescence. Head red, the vertex darker, the face and orbits lighter, base of the head black; antennæ black in the middle above. Thorax black, the prothorax and mesothorax red above, the hinder edge of the prothorax paler, and the front edge narrowly bordered with yellow; the edges and central line of the mesothorax more or less bordered with black above; on the pleura, beneath the fore wings, is a conspicuous yellow spot; scutellum and post-scutellum edged in front with yellow, the band on the former hardly complete in the middle, and the space behind it more or less red; metathorax finely and transversely striated, a deep longitudinal channel in the middle, more strongly striated, and edged with a yellow stripe on each side; on each side, above the base of the hind coxæ, is another yellow spot. Abdomen dark brown, finely pubescent, shading into black at the base, and generally more or less red at the extremity. Legs red, coxæ and femora black, knees red or yellow, hind tibiæ more or less black in the middle. Wings smoky hyaline, strongly tinged with ferruginous along the costa of the fore wings; tegulæ ferruginous.

Var. *a.* Face, head beneath, pectus, and coxæ beneath yellow; femora striped beneath with yellow; first two segments of the abdomen with a small yellow spot on each side above, and a larger one near the base of the first segment beneath.

Very nearly allied to *P. instabilis*, Sauss., from Mexico; but this is a redder insect, with the segments of the abdomen always more or less bordered with yellow.

This insect is called here "*Marimboudo*," and is very common. It makes its nest on the underside of an overhanging rock or eaves of a house, or on the branch of a tree. I have seen a Cashew-nut tree containing an immense number of nests in various stages of construction. The nest consists of a single comb of cells of a triangular or oval outline, and attached by a pedicel at the narrow end; a large one is about four inches in length, and three across in the broadest part. The cells are about three quarters of an inch deep, and a quarter of an inch across. The insect stings slightly, but only when much irritated.

It plays a very important part in the fertilization of the flowers, especially the Cucurbitaceæ.

30. Halictus lævipyga, n. sp.

Female. Long. corp. 10 millim.; exp. al. 16 millim.

Head and thorax dark green, slightly bronzed; abdomen shining, shading into violet at the extremity of the segments; wings hyaline; legs black, clothed with pale hairs.

Head and face finely and closely punctured, sparingly studded with whitish hairs, dark green, occasionally shading into bronzy or violet in certain lights; clypeus green or violet-black, with much larger and fewer punctures than the upper part of the head; the extremity and the labrum black, the lower mouth-parts dull bronzy green; antennæ black, ferruginous towards the extremity beneath; thorax dark green, thickly punctured, most finely on the prothorax, which shades into bronzy; metanotum and base of abdomen above densely clothed with whitish hairs; metanotum with longitudinally diverging striæ in front, behind deeply and longitudinally concave, with small punctures, the intermediate spaces still more finely punctured; tegulæ testaceous; wings hyaline, with brown nervures and a slight violet iridescence; pectus dull green, densely clothed with whitish hairs; propectus violet-black; legs black, with whitish hairs above, and the tibiæ and tarsi densely clothed with red hairs beneath; the knees (very narrowly), spines, and last joint of the tarsi mostly reddish. Abdomen smooth and shining, the punctuation being extremely fine, even under the microscope, and densely clothed with short white hairs, except towards the extremity of the first two segments; the segments greenish in front and violet-black behind; towards the extremity the lateral bristles are longer; under surface of abdomen brown, the extremities of the segments slightly reddish.

31. Halictus alternipes, n. sp.

♂ ♀. Long. corp. 11 millim.; exp. al. 13–14 millim.

Head and thorax dark green above; abdomen green, smooth and shining, the neighbourhood of the incisions more or less violet; wings hyaline, or slightly clouded in and below the radial cell, and towards the extremity of the discoidal cell of the hind wings; legs reddish, the femora and tibiæ in the middle, and often the last joint of the tarsi dark green or blackish; clypeus tipped with tawny, and with more numerous punctures than in *H. lævipyga*; the punctures of the mesothorax and the lower part of the metathorax larger; the channel of the metathorax narrower; antennæ black above, ferruginous below; cheeks bronzed.

Closely allied to *H. lævipyga*, but differs in colour and punctuation. Appears to be a very common species.

32. HALICTUS ATRIPYGA, n. sp.

♂ ♀. Long. corp. 5 millim.

Head and thorax clothed with whitish hairs, green, very finely punctured; head much bronzed; clypeus rather short, the tip black; metanotum longitudinally striated in front; abdomen bronzy black, more violet in the incisions; antennæ black, ferruginous beneath; head and thorax dull bronzy green beneath; abdomen beneath shading more into ferruginous brown; wings hyaline, with brown nervures; tegulæ pitchy; legs ferruginous, the femora, and sometimes more or less of the tibiæ, blackish.

A small species, not closely allied to any other, and easily recognizable by the strong bronzy colouring of the back of the head.

These *Halicti* were taken in the flowers of the Melons and the *Oxalis*, and play an important part in the fertilization of the flowers in the island.

33. TARUCUS HANNO, *Stoll.*

Papilio Hanno, *Stoll, Suppl. Cram.* pl. xxxix. ff. 2, 2 B (1790).

Rusticus adolescens Hanno, *Hübn. Samml. ex. Schmett.* i.

Many specimens, taken between July 25 and August 31.

The Brazilian form of this widely distributed and variable species. It is generally larger than the more northern form of the species, and stands in the British-Museum collection under the MS. name of *T. monops*, Zell. The specimens expand from 17½ to 23 millim.

This little Blue was very common on Rat and Main islands. The *Catachrysops trifracta*, Butl., said to have been caught on Rat Island by the 'Challenger' Expedition, we did not meet with; and it seems possible that there was some mistake in the labelling of this specimen, as the genus is only known from the East Indies.

34. Heliothis armiger (*Hübn.*).

Noctua armigera, *Hübn. Eur. Schmett., Noct.* f. 370.

A cosmopolitan species.

A single specimen was caught flying in the daytime on East Hills.

35. Anomis (?) dispartita, *Walk.*

Anomis (?) dispartita, *Walk. Cat. Lep. Het.* xiii. p. 990, n. 8 (1857).

Described by Walker from Jamaica and St. Domingo; the specimens from Fernando Noronha most nearly resemble that obtained in the former locality.

Taken on the wing at night. Main Island.

36. Anthophila flammicincta, *Walk.*

Anthophila flammicincta, *Walk. Cat. Lep. Het.* xxxii. p. 801 (1865).

The types are from St. Domingo.

37. Bolina bivittata, *Walk.*

Bolina bivittata, *Walk. Cat. Lep. Het.* xiii. p. 1156, n. 23 (1857).

A common species. The specimens in the British Museum are from Honduras, Venezuela, St. Domingo, and Jamaica. The single specimen from Fernando Noronha has a narrower band than any of the others; but it would require a series to show whether this character is constant in the locality, or a mere individual variation.

38. Thermesia gemmatalis (*Hübn.*).

Antisarsia gemmatalis, *Hübn. Zutr. ex. Schmett*, i. p. 26, n. 77, ff. 153, 154 (1818).

Common among the wild beans on Main and Rat Islands (August 17–25).

39. Nemoria denticularia, *Walk.*

Nemoria (?) denticularia, *Walk. Cat. Lep. Het.* xxii. p. 536, n. 20 (1861).

The locality of the type specimen is unknown; but it is probably a wide-ranging species, as there are specimens in the British Museum from Corrientes and Goya.

40. Acidalia Fara, n. sp.

Exp. al. 16 millim.

Male. Grey, thickly dusted with brown, the first line commencing at about one third of the length of the wing with a dark shade curving to a conspicuous black spot, thence curving sharply inwardly till it terminates in a more conspicuous dark acute angle projecting outwardly just above the inner margin; it is not continued on the hind wings. The second line commences at two thirds of the length of the wing in another dark shade on the costa, which runs obliquely to another black spot, below which it is continued in grey festoons across both pairs of wings, forming more than a half-circle on the basal side of a conspicuous black spot on the hind wings. The third line is the most conspicuous, and is formed of a series of black spots connected by a grey line on the fore wings, which curves inwards twice, a little above the middle, and again above the inner margin. On the hind wings it forms a nearly continuous black line, curving outwards at one fourth of the distance from the costa, and again, in a wider and more regular curve, below the middle. At the base of the fringes runs a row of black dashes, and between these and the third line are a series of indistinct greyish markings. Underside grey-white, with the central spots indicated, but not conspicuous. Head black above; body and legs grey; abdomen rather indistinctly banded with black above, and with a blackish space at the base of the anal tuft; femora tawny beneath, front femora and tibiæ blackish above; antennæ tawny, alternating with whitish above.

Allied to *A. retractaria* from Florida, but darker and more distinctly marked.

41. PYRALIS MANIHOTALIS, *Guén.*

Pyralis manihotalis, *Guén. Spéc. Gén. et Lép., Delt. et Pyr.* p. 121 (1854).

Described by Guénée from Cayenne.

42. SAMEA CASTELLALIS, *Guén.*

Samea castellalis, *Guén. Spéc. Gén. Lép., Delt. et Pyral.* p. 195 (1854).

A widely distributed species throughout America.

43. HYMENIA PERSPECTALIS (*Hübn.*).

Pyralis perspectalis, *Hübn. Eur. Schmett., Pyr.* f. 101.

A widely-distributed species.

44. PHAKELLURA HYALINATA (*Linn.*).

Phalæna-Geometra hyalinata, *Linn. Syst. Nat.* i. (2) p. 874, n. 279 (1767).

This little moth was very common on the Main Island, especially about the Peak, among the wild melons, &c. (August 17–20).

A cosmopolitan species.

45. MARGARONIA JAIRUSALIS, *Walk.*

Margaronia jairusalis, *Walk. Cat. Lep. Het.* xviii. p. 524, n. 15 (1859).

Originally described from Venezuela.

46. ACHARANA PHÆOPTERALIS (*Guén.*).

Botys phæopteralis, *Guén. Spéc. Gén. Lép., Delt. et Pyr.* p. 349 (1854).

A common and widely-distributed species in Tropical America.

47. PACHYZANCLA DETRITALIS (*Guén.*).

Botys detritalis, *Guén. Spéc. Gén. Lép., Delt. & Pyr.* p. 347 (1854).

Widely distributed in South America.

48. OPSIBOTYS FLAVIDISSIMALIS (*Grote*).

Botis flavidissimalis, *Grote, Canad. Ent.* ix. p. 105 (1877).

Described by Grote from Texas; but there are also specimens from South America in the British Museum.

49. MELLA ZINCKENELLA (*Treitschke*).

Phycis zinckenella, *Treitschke, Schmett. Eur.* ix. (1) p. 201 (1832).

Many specimens. A cosmopolitan species. There are specimens in the British Museum from S. Europe, S. Africa, and Australia. It is a somewhat variable insect, but is easily recognized by the broad pale costa and the huge palpi.

50. PENTATOMA TESTACEA, *Dall.*

Pentatoma testacea, *Dall. Cat. Hem.* p. 250, n. 43 (1851).

Several specimens were met with in various spots in the Main and Rat Islands.

51. LYGÆUS RUFOCULIS, n. sp.

Long. corp. 9–11 millim

Bright red, including the eyes and ocelli; head above, between and in front of ocelli, blackish; antennæ and legs blackish and setose; coxæ reddish at base, corium more or less varied with blackish, outer edge narrowly black, membrane brown, blackish in ♀. Head and thorax rugose, the former truncate and bicarinate in front. Rostrum black, extending to the extremity of the posterior coxæ. Corium fully developed in ♂; in ♀ about half as long as the abdomen, and rather pointed.

An extremely common species, allied to *L. anticus*, Walk., in which, however, the head and thorax are unicolorous red, and the tegmina are reddish brown.

This highly-coloured Bug occurred in large numbers upon the ground in the Sapate under bushes of *Jacquinia*; but was local, only found in a few spots.

52. HERÆUS VARIEGATUS, n. sp.

Long. corp. 7 millim.

Head and front of pronotum dull red; posterior lobe of pronotum testaceous, with very large separated punctures. Corium blackish, with rows of punctures; outer edge of corium testaceous, with two black spots, one at its extremity, the other a little before; the veins, a large triangular spot on the inside, and three smaller spots between this and the margins are also testaceous; scutellum with a converging testaceous line on each side; membrane blackish, with a testaceous blotch at base and tip. Antennæ finely pubescent, the two basal joints testaceous, the third blackish, the fourth black, with the base white. Legs testaceous, front and hind femora and all the tibiæ strongly spined. Body red beneath, pectus darker. Rostrum testaceous, extending to the base of the hind coxæ.

Allied to *H. percultus*, Dist.

Taken at light.

53. LIGYROCORIS BALTEATUS, *Stål.*

Ligyrocoris balteatus, *Stål, Vet.-Akad. Handl.* (2) xii. p. 146, no. 4 (1874).

Flew into light.

54. LIGYROCORIS BIPUNCTATUS, n. sp.

Long. corp. 4 millim.

Head, pronotum, and scutellum black; hinder lobe of pronotum with two short, reddish, longitudinal stripes in the middle, a reddish spot on each side in front and one at each angle behind; antennæ testaceous, the last joint black. Corium testaceous, with rows of black depressed punctures in the middle; the veins on the inner edge black, running into a large irrregular apical black border; the outermost vein broadens out just before reaching it and encloses a very conspicuous oval white spot; membrane greenish, with two brown, diverging, curving lines in the middle, two brown spots at the base, and one on each side of the curve. Under surface of the body apparently black; legs testaceous, femora more or less black; but the specimen is carded in such a manner as not to allow of a proper examination of the under surface or of the legs and rostrum.

55. RHAGOVELIA INCERTA, n. sp.

Long. corp. $2\frac{1}{2}$ millim., lat. 1 millim.

Blackish brown; the orbits, front of prothorax, whitish, slightly tawny; abdomen with a whitish pile on the sides and less conspicuous beneath; base of antennæ, femora above, and legs beneath tawny; closed hemilytra whitish (or slightly tawny) at the base between the nervures, but with no other pale markings except the conspicuous long-oval white spot before the tip.

A shorter and broader species than any at present represented in the British Museum; but with most general resemblance to *Microvelia vagans*, White. It is possibly a variety of the widely distributed and variable *Velia collaris*, Burm.

On grasses in the lake.

56. PSILOPUS METALLIFER, *Walk.*

Psilopus metallifer, *Walk. List Dipt. B. M.* iii. p. 647 (1849).

Flying over Cucurbitaceæ on the Peak.

57. TEMNOCERA VESICULOSA (*Fabr.*).

Syrphus vesiculosus, *Fabr. Syst. Antl.* p. 226, n. 11 (1805).

Flying over herbage in the sun, and also taken on the flowers of the cabbage in the garden.

58. SARCOPHAGA CALIDA, *Wiedem.*

Sarcophaga calida, *Wiedem. Aussereurop. zweifl. Ins.* ii. p. 366, n. 24 (1830); *Walk. Ins. Saund. Dipt.* p. 326 (1856).

COLEOPTERA.

By CHAS. O. WATERHOUSE, F.E.S.,

Assistant in the Zoological Department, British Museum.

The number of species obtained was 24. As might naturally be expected, many of them are Brazilian species or are species with a wide geographical range. One of the Heteromerous genera, which I have named *Æsthetus*, is almost certainly indigenous. Perhaps the most interesting species is a Longicorn of the genus *Acanthoderes*. At first sight I took it to be a pale variety of *A. jaspidea*, a common Brazilian species, but on closer examination the apex of the elytra was found to be different. If this species should hereafter prove to be peculiar to the island, it will be a somewhat remarkable fact.

A few of the species the determination of which would have been attended with great labour, I have left unnamed, as I feel sure they are introduced species.

BRACHELYTRA.

BELONUCHUS, sp.

A single specimen, closely resembling *B. formosus*, Grav., of Brazil, but smaller, 2¼ lines in length. It was found in a decomposing rat.

TROGOPHLŒUS, sp.

A single example, closely resembling *T. pusillus*, Grav., of Europe, but a trifle larger, with the two basal impressions of the thorax strongly marked.

NECROPHAGA.

DERMESTES FELINUS, *Fabr.*

A widely-distributed species.

EPURÆA ?

A single specimen of a very small species (1¾ millim.) somewhat resembling *Epuræa limbata*, but a little narrower, with the margins not expanded, light brown, finely pubescent, closely and very finely punctured; each elytron having two fine, widely separated, impressed striæ. Abdomen covered by the elytra.

PALPICORNIA.

PHILHYDRUS MARGINELLUS, *Fabr.*

A widely-distributed species.

DACTYLOSTERNUM ABDOMINALE, *Fabr.*

A widely distributed species.

LAMELLICORNIA.

ATÆNIUS, sp.

Three examples belonging to two species. No doubt introduced.

STRATEGUS ANTÆUS, *Fabr.*

The prothorax and elytra of this North and Central-American species. [Its larvæ were found under rubbish in the Sapate with the fragments of the perfect insect, which we did not succeed in taking alive.—H. N. R.]

SERRICORNIA.

HYPORRHAGUS MARGINATUS, *Fabr.*

A single example of this West-Indian species in the flowers of an acacia in the garden.

MALACODERMATA.

XYLOPERTHA, sp.

Three specimens. Probably an introduced species. Four millimetres in length; reddish yellow, shining, with the rough anterior part of the thorax brown and the apex of the elytra pitchy. The elytra finely punctured at the base, strongly punctured posteriorly; the posterior declivity also strongly punctured, with three nodes on its upper margin on each elytron.

[These came to light in our rooms.—H. N. R.]

HETEROMERA.

EPITRAGUS BATESII, *Mäklin.*

Elongatus, ellipticus, modice convexus, parum nitidus, parce flavo-pubescens, crebre punctatus; elytris striato-punctatis, striis postice obsoletis.

Long. 7½ millim.

The head is closely and rather strongly punctured. The thorax two fifths broader than long, broadest a little behind the middle, very slightly narrowed behind, a little more in front; distinctly and moderately strongly punctured; the punctures on the disk separated from each other by one or one and a half times the diameter of the punctures; the punctures towards the sides larger and closer together, giving a slight rough appearance; the punctures at the anterior margin are finer. The elytra are at the base a little wider than the base of the thorax, very slightly widened to rather behind the middle and then arcuately narrowed to the apex; moderately finely but distinctly punctured, the punctures not very close together; with several short lines of rather larger punctures, which are most distinct towards the margin. Antennæ and legs pitchy.

Numerous examples of this species from the Amazons are labelled in Mr. F. Bates's collection with the name "*E. Batesii*, Mäkl.," but the species does not appear to be described.

BLAPSTINUS RIDLEYI, n. sp.

Elongatus, oblongo-ovatus, parum nitidus, fusco-brunneus, flavo-pubescens; thorace crebre evidenter punctato; elytris punctato-striatis, interstitiis lateralibus et ad apicem convexiusculis, subtiliter vix crebre punctatis; antennis, tibiis tarsisque piceis.

Long. 5 millim.

Antennæ with the third joint elongate, about one fourth longer than the second, the fourth a trifle shorter than the third, the fifth, sixth, and seventh about as long as broad, the eighth, ninth, and tenth slightly transverse. The head is moderately strongly punctured, but the punctures are not *very* close together; the epistome is moderately emarginate, rather more closely punctured than the head. The thorax is evenly convex, broadest *at* posterior angles, scarcely sinuate at the sides, narrowed at the anterior third; moderately strongly punctured, the intervals between the punctures about equal to the diameter of the punctures; the anterior angles moderately prominent and acute; the base rather strongly bisinuate. The elytra a little broader than the thorax; somewhat strongly punctate-striate; the striæ near the suture scarcely impressed at the base; the punctures in the striæ moderately large and close together; the punctures on the interstices are fine but distinct, the spaces between them being about once and a half the diameter of the punctures.

I have ventured to describe this species as it appears to be new, although probably introduced.

BLAPSTINUS, sp.

Several specimens of a species closely resembling *B. pulverulentus*, Esch., but with the striæ of the elytra more impressed. There are several North-American species closely allied to this with which I am unacquainted, and it is not improbable that it is referable to one of them.

ÆSTHETUS, n. gen.

General characters of *Cyrtosoma*. Mentum small, narrowed at the base, truncate in front; ligula somewhat round; labial palpi short and stout, the apical joint rather large, ovate. Labrum nearly twice as broad as long, nearly straight in front, the angles rounded. Head transversely impressed between the eyes. Epistome not separated from the forehead by a distinct line, considerably advanced in front of the insertion of the antennæ, obliquely narrowed in front. Thorax evenly convex, the sides gently arcuate. Scutellum very small, short triangular. Elytra oblong-ovate, very convex, but somewhat flattened dorsally; their epipleura very broad and flat, gradually narrowed to the apex of the elytra. Wings absent. Prosternal process considerably produced posteriorly, acuminate, horizontal. Mesosternum sloping, slightly concave. Metasternum very short; intermediate and posterior coxal cavities separated by a very narrow space. Antennæ moderately long and slender, the third to seventh joints elongate, the apical joints a trifle broader. All the tibiæ slightly curved.

ÆSTHETUS TUBERCULATUS, n. sp.

Piceo-niger, nitidus; capite crebre sat fortiter punctato, epistomo convexo, subtiliter punctulato; labro piceo-flavo; thorace creberrime punctato, latera versus tenuiter ruguloso; elytris opacis, fortiter striatis, striis impunctatis, interstitiis sat convexis, singulis serie tuberculorum minutorum instructis; antennis, palpis tarsisque piceis, tibiarum apice intus, tarsisque subtus fulvo-pilosis.

Long. 9–11 millim.

The antennæ are somewhat slender; the second joint scarcely longer than broad, the third three times as long as the second; the fourth to seventh joints elongate, each a trifle shorter and broader at its apex than the previous one; the eighth, ninth, and tenth joints pilose, broader and shorter than the seventh, but not transverse; the eleventh oval. The thorax is evenly convex, very gently arcuate at the base, emarginate in front, moderately rounded at the sides, finely margined all round (except at the middle of the front margin), the posterior angles are *very* slightly projecting, the anterior angles slightly obtuse. The punctures on the disk are close and distinct, at the base and at the sides they are very fine and obscure. On each side of the disk the surface is finely longitudinally rugulose, but this is very slight in the larger examples. The interstices of the elytra are closely and very finely punctured, each interstice having a line of rather closely placed, minute, shining tubercles. Epipleura of the elytra dull. Under flanks of the prothorax dull and closely longitudinally striated. Sterna and abdomen shining, finely punctured.

The two smaller examples have the thorax relatively narrower than in the larger examples, and the rugulose surface more marked and more extended. These differences are no doubt sexual.

These were found under stones and bark in the woods of the Sapate.

COPIDITA, sp.

Several examples of a species which I am unable to determine. Yellowish, usually with slight grey shade on the elytra. Length 6–7 millim.

Those captured were attracted by a light.

BRUCHIDA.

BRUCHUS POROSUS, *Sharp*.

Two imperfect male specimens, which may be referable to *B. porosus*, Sharp (Biol. Cent.-Amer., Coleopt. v. p. 490), from Guatemala, the type of which (unique) is a female. The brown colour is rather more suffused over the elytra, and the punctures are not quite so large. The pectinations of the antennæ are very long.

RHYNCHOPHORA.

SITOPHILUS ORYZÆ, *L.*

Introduced. [It is very destructive to the maize-grains, so that in the store-rooms the maize is covered with a thick layer of sand to prevent their attacks.—*H. N. R.*]

XYLOPHAGA.

TOMICUS ?

Two immature specimens belonging to this or an allied genus. Very pale yellow ; $1\frac{1}{2}$ millim. in length.

PYCNARTHRUM ? SETULOSUM, n. sp.

Oblongo-ovatum, brunneum, sat nitidum, convexum ; thorace latitudine paulo breviore, convexo, postice paulo angustiore, ante medium oblique angustato, creberrime subtiliter punctulato; elytris thoracis basi perparum latioribus, subtiliter striato-punctatis, interstitiis parce subtilius punctatis, parce pubescentibus, seriatim squamulato-setosis; antennis pedibusque sordide testaceis.

Long. 2 millim.

Head distinctly visible from above; concave in front in one sex. Eyes coarsely granular, widely separated above, but very slightly separated below. Antennæ testaceous; funiculus 6-jointed (or *possibly* 7)*; the first large, subglobose; the following joints very short and transverse, gradually increasing in width; club large, 3-jointed, oval, pubescent. The thorax has a well-defined margin separating the under flanks. The surface (seen through a microscope) is finely coriaceous, moderately finely punctured, the intervals between the punctures about equal to the diameter of the punctures; sparsely pubescent, the hairs at the front margin slightly thickened. The striæ of the elytra are lightly impressed, but scarcely so on the disk; the punctures in the striæ moderately fine and close together, the punctures on the interstices rather smaller and moderately widely separated. Anterior tibiæ rather broad, with four or five small obtuse teeth on the outer side, and two larger ones, one at one third from the apex, the other apical. Tarsi slender.

This insect agrees in the majority of its characters with *Pycnarthrum gracile*, Eichh. (Mém. Soc. R. d. Sci. Liège, viii. 1878, p. 104). The anterior tibiæ are, however, evidently different: "tibiæ anteriores apice extus rotundatæ." The structure of the antennæ appears to be the same, but the club is ovate and not acuminate. The elytra are punctate-striate and not crenate-striate, and the punctures are round and not subquadrate, &c.

It appears to be related to *Cnesinus*, Horn, but the anterior coxæ are not so widely separated.

[It was bred from the bark of the endemic fig-tree, from a specimen out of the garden of the Residency.—*H. N. R.*]

PLATYPUS PARALLELUS, *F.*

Two examples of this Brazilian species.

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* The joints after the first are so confused that even with the antenna mounted in balsam I am not quite certain of their number.

Longicornia.

Acanthoderes Ridleyi, n. sp.

Latus, depressus, omnino albo-griseo-pubescens; elytris pone medium macula laterali inconspicua ornatis; apice mucro brevi instructo.

Long. 11½–16 millim.

Form and general appearance of *A. jaspicea*, Germ., but a little more depressed and with the elytra rather more obtuse at the apex. The colour is pale whitish grey, generally with some sandy-yellow shade on the base of the antennæ, disk of the thorax, and on parts of the elytra. The front of the head is paler, with some conspicuous black punctures, especially between the eyes. The thorax has the usual median raised line and slight swelling on each side of the disk; there is no black at the sides; there is a line of very distinct black punctures along the basal margin, and a similar (but less regular) line along the front margin, and there are some other punctures scattered over the surface. The elytra have the usual costa distinct, slightly sinuous as in *A. jaspidea*. On the shoulder a few small tubercles may be traced through the pubescence. Some examples have scarcely any trace of spots, but most have a not very conspicuous pale fuscous spot behind the middle near the side, and behind this there are generally numerous black punctures which are surrounded by a brown shade; usually a short oblique brown line may be seen at the apex of the costa. Apical mucro shorter and less acute than in *A. jaspidea*. Abdomen with a slight grey shade in the middle, and a line of black dots on each side. Tibiæ unicolorous, or with a very slight pale brown spot near the apex. Some examples have a slight oblique brown spot on the disk, rather before the middle.

[These flew into light in the evening, and were very plentiful. They made a loud squeaking noise when caught.—*H. N. R.*]

Trypanidius isolatus, n. sp.

Dense pallide griseo-pubescens; thorace guttis minutis nonnullis ornato; elytris nigro-punctatis.

Long. 13–15 millim.

Closely allied to *T. dimidiatus*, Th., but relatively a little narrower and quite differently coloured. The pubescence is very pale grey, some parts being a trifle paler than others; and there is a slight mixture of pale yellowish-brown pubescence, especially on the elytra. On the underside the pubescence is more sandy yellow, leaving the middle of the sterna and abdomen dark. The thorax has the usual line of large punctures at the base; a very slight raised line behind the middle of the disk; the lateral tooth small and acute. The elytra have the very slight costa near the suture a little less raised at the base than in *T. dimidiatus*, and the apical truncature of each elytron is not straight but has the angles rounded. The black punctures are arranged as in *T. dimidiatus*, but extend to the apex. There is a small pale spot at the base close to the scutellum, and a scarcely noticeable brown spot near the suture a little way from the base. One example has a slight whitish mark on the suture just before the middle, and a moderately broad whitish band near the apex, somewhat similar to the band in *T. dimidiatus*, but broader nearer the apex and less angular near the suture, where it is only carried up to a level with its origin on the margin.

This species is, in many respects, intermediate between *T. dimidiatus* and *T. melancholicus*.

[These also came to light with the preceding, but were rarer, only two being taken.—*H. N. R.*]

PSEUDOTRIMERA.

SCYMNUS, sp.

Two examples of a species resembling the Indian *S. xeranipelinus*, Muls., but a trifle smaller ($1\frac{1}{2}$ millim.): uniform brownish yellow, with golden pubescence; punctuation of the elytra close, fine but distinct; metasternum very strongly punctured.

THYSANURA and COLLEMBOLA.

By H. N. RIDLEY, M.A., F.L.S.

IAPYX SAUSSURII, *Humbert, Rev. et Mag. Zool.* Sept. 1868, p. 351, pl. ii. figs. 1–5.

A single specimen of what I believe to be a young example of this little animal was obtained under a stone in the Sapate woods.

It corresponds closely to the figure given by Humbert, excepting that it is only 10 millim. in length instead of 22 millim., and that the antennæ are as hispid as those of *I. solifuga*, Halliday. In Humbert's figure the antennæ are quite glabrous, but as he does not mention this among the differences between his species and *I. solifuga*, it is possibly an error of the draughtsman. The number of joints in the antennæ is almost equal to that of *I. Saussurii*, and more than that of *I. solifuga*; but the animal is but little larger than the type specimens of *I. solifuga* in the British Museum. Another point of difference, though very slight, is in the forceps. In both the above quoted species there is a secondary tooth on the inner edge of each chela, besides several smaller rounded papillæ; now in the specimen from Fernando Noronha this secondary tooth is nearer the apex of the chela than is either of the others.

Distribution. The distribution of the whole genus is very little known at present, as specimens are not often collected. *I. solifuga* occurs in South Europe, Algeria, and Madeira (the var. *Wollastoni*). *I. Saussurii* was obtained in Mexico at Orizaba. Species are also recorded, but not described, from the United States and Calcutta.

Dr. Grassi, in p. 1 of "Progenitori degli Insetti e dei Miriapodi," gives *I. Saussurii* as from Brazil; but does not say whether he has seen Brazilian specimens; and in his list of species mentions it merely from Mexico, evidently using "Brasili" as a synonym for Mexico. It is more than probable that, if sought for, it will be found to occur also on the mainland of Brazil.

LEPISMA LEAI, n. sp.

Though it was to be expected that house-inhabiting Lepismas would occur here, I sought for them in vain until just as we were leaving, when a single large *Lepisma*, perhaps disturbed by the packing-operations, appeared. The specimen was somewhat damaged in capturing it; but as it seems to be undescribed, and is a very curious animal, I describe it as it is.

Corpus 19 millim. longum (setis exclusis), griseum. Caput parvum, subrotundatum. Antennæ filiformes (fractæ). Oculi minimi, nigri, pone basin antennarum positi. Prothorax 3 mm. longus, margine superiore recto, inferiore excavato, marginibus lateralibus productis; mesothorax et metathorax similes sed breviores. Pedes coxis valde crassis, brevibus, oblongo-ovalibus, subtus duabus setis longis; articulis secundis longioribus multo tenuioribus pubescentibus, supra spina crassa armatis; tertiis tenuioribus, æquilongis, subtus setiferis; tarsis multo brevioribus setiferis, uncis parvis duobus terminalis. Inter coxas tres squamæ, ovales, obtusæ, quam coxas minores. Abdominis segmenta subæqualia, glabra. Segmentum ultimum breve. In medio penultimi segmenti appendices duæ breves, complanatæ, acutæ; post eas duæ laterales, breves, teretes, hispidæ, tunc duæ longæ multo longiores et tenues hispidæ, tunc duæ longæ graciles hispidæ, et in medio appendix longissima unica, crassior, setosa, articulata et annulata.

The abdomen was filled with some bright green substance, which was emitted from the mouth when touched—apparently green paint nibbled off the shutters.

The most nearly allied species to this which I have seen was obtained in Socotra, and is now in the British Museum. The breadth of the thorax is greater than in *L. saccharina*, but the head is not concealed as in some species.

LEPISMA CORTICOLA, n. sp.

Parva, 1 cm. longa, angusta, metallica plumbea, dorso arcuato nec complanato. Caput parvum, rotundatum; oculi ad basin antennarum, rubri. Antennæ graciles, annulatæ, hispidæ; articulus basalis maximus, reliqui breves, plurimi, crassiusculi. Palpi maxillares 5-articulati, articulis breviusculis. Palpi labiales breves, clavati; articulus basalis brevis sectus, secundus longior, tertius brevissimus conicus, quartus rotundatus brevis. Thorax angustus, quam abdomen vix latior. Prothorax quam mesothorax longior, metathorax brevior, marginibus omnium ciliis rigidis munitis. Pedes longiusculi, hispidi; coxæ breves, latæ nec crassæ; secundo paullo angustior et brevior; tarsi longiusculi, triunguiculati; squama inter coxas prothoracis ovata acuta magna, alteræ minores. Abdomen breviusculum; appendices segmenti ultimi graciles, hispidæ, breviusculæ, subæquales.

In rotten wood and under stones in the Sapate and the base of the Peak. It also occurred on the mainland at Pernambuco in similar localities.

The chief peculiarity of this *Lepisma* is its very rounded back, resembling that of a *Machilis* rather than that of a typical *Lepisma*. It is a small active species occurring singly, of a dark leaden-grey colour. The scales resemble those of *L. saccharina* in outline, but are more notched at the upper edge, and seem also to have more numerous ridges. The thorax is not much broader than the abdomen, and the margin does not extend much beyond the feet.

MACHILIS, sp.

A single specimen of a very small brown *Machilis* was taken under a stone at the base of the Peak; but, by an accident, the specimen was destroyed, and we met with no others.

SEIRA MUSARUM, n. sp.

Minuta, gregaria, in vita metallica, 1 mm. longa. Caput rotundatum, hispidum; oculi in maculis nigris fascia obscura sæpe connectente. Antennæ breviusculæ, violaceæ, hispidæ; articulò basali brevissimo, secundo et tertio subæquali basali duplo longioribus; articulo quarto triunciali, longissimo. Collum distinctum. Segmentum secundum corporis (prothorax) latum, marginibus rotundatum; tertium brevius, quartum multo brevius, quintum longius, sextum quinto subæquale, septimum sexto triplo longius, terminalia brevia. Corpus in speciem ferme glabrum, insquamosum, flavescens, segmentorum basibus et marginibus cæruleo-purpureis. Pedes hispidi, primi breviusculi, secundi longiores, tertii longissimi, graciles.

Very abundant between the wet bases of the petioles of the bananas, at the base of the Peak.

It is very nearly allied to *S. Buskii*, Lubb., which was described from specimens found in a hot-house in England, and probably introduced with tropical plants. It differs in the absence of hairs round the neck and on the body, longer hind legs, and also in coloration. The spring resembles that of *S. Buskii*, and is rather hispid. The neck is very distinct. These small Collembola have been much neglected by collectors, and it is most probable that this species was introduced in the bananas.

ECHINODERMATA*.

There were not many species of Echinoderms found on the island, but the following were obtained:—

CIDARIS TRIBULOIDES, *Lamk.*

Very plentiful on the north side of the island in coral-reef pools, near Sambaquichaba and Morro do Chapeo.

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* The species were determined for me by Prof. Jeffrey Bell.

Diadema saxatile, *L.*

Two specimens from pools at Morro do Chapeo.

Tripneustes esculentus, *Leske.*

Very plentiful in rock-pools in Sponge Bay, sometimes almost filling a small pool.

Ophiura cinerea, *M. & Tr.*

Common under stones, north side.

Ophiacantha sp.

A very small specimen with the preceding.

Ophiocoma pumila, *Lütk.*

Young specimens.

Ophiocoma echinata, *Ag.*

A single specimen from Portuguese Bay. Quite unknown to our guide, so it is probably rare here.

OLIGOCHÆTA.

By W. Blaxland Benham, D.Sc.

On February 2, 1889, I received a tube of small worms, which had been collected by Mr. H. N. Ridley in the island of Fernando Noronha, with the request that I would identify them. I gladly undertook to do so, and obtained permission to open the worms, if necessary; for it is now admitted that in most cases it is almost impossible to pronounce with certainty on the genus of an Earthworm from external characters alone; and although in some cases external characters may point to some particular genus, yet it is not always safe to rest content with such an indication, and we must examine the internal anatomy in order to be sure of the point.

The tube which I received contained six small, ill-preserved worms, one of which was a Polychæte, which I did not further examine. Of the remaining five, the first (which I will call A) was of rather an earthy-brown colour and measured 4 inches in length; the second and third were similar in colour and general appearance, but were only about 2 inches long; the fourth (B) was of a much darker tint, and was reddish brown in colour, somewhat like that of *Lumbricus terrestris*; it measured $5\frac{1}{2}$ inches; the fifth turned out to be merely the anterior portion of a similar specimen.

The Worm A.—The first feature which struck me was the quincuncial arrangement of the setæ in the posterior region of the body; anteriorly the setæ are in couples.

The body-wall, being somewhat transparent, allowed me to distinguish through it paired light-coloured bodies, or "pyriform sacs," lying in the ventral region posteriorly. The most anterior somite of the body is very elongate, and carries the mouth terminally, the prostomium being absent. These features recalled the genus *Urochæta* of Perrier; but somewhat similar characters are found in other Earthworms: thus the pyriform sacs have been described by myself in *Urobenus* *; and the scattered condition of the setæ, though not identical with the arrangement noticed, closely resembled, and might easily be confounded with, what obtains in *Diachæta* (Benham).

Turning then to the clitellum, I found it to cover the somites XIV. to XXII. or XXIII.; it is not complete on the ventral surface; and both anteriorly and posteriorly is, as is often the case, more feebly developed. One peculiar feature, however, about the clitellum, which therefore recalled *Urochæta*, is the fact that the intersegmental grooves are deep and noticeable; the glandular structure not being continuous from somite to somite, as is the case in most other Earthworms.

I could see no pores, or external apertures, of the genital ducts or nephridia; I therefore opened the worm, in the ordinary way, by a median dorsal incision, in order to satisfy my suspicion as to its belonging to the genus *Urochæta*.

The septa are thin, with the exception of four situated anteriorly, which are greatly thickened, namely those forming the posterior wall of somites VI., VII., VIII., and X. (the septum between IX. and X. is absent). Such thickened muscular septa are not unusual in Earthworms; but whether their position is constant in a given species is by no means certain. Perrier has not helped us to settle the matter, since in his figure he represents only four such septa, whereas in the text he speaks of five of them. However, Beddard †, in a species of this genus from Australia, describes four, having the same position as in the worm under consideration.

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* Quart. Journ. Micr. Sci. vol. xxvii.

† Proc. Roy. Soc. Edinb. xiv. 1887, p. 160.

The alimentary tract, the vascular system, the nephridia, all exhibit the characters peculiar to or present in *Urochæta.*

There is but a single pair of seminal reservoirs, which have a greater extent than in *U. corethrura* (F. Müller *); for in the present specimen that lying on the left side passes through eight somites, that of the right side passes through twelve somites, commencing in somite XII., where are situated also the ciliated rosettes.

I was unable to trace the sperm-ducts; I could find no ovary; I did not look for testes, as this would have necessitated some damage to the worm, which I was anxious to injure as little as possible.

There are three pairs of spermathecæ; each is a very elongate, thin-walled sac, enlarged distally, and lying respectively in somites VII., VIII., IX. The chief difference between the two species of *Urochæta* that have received names lies in the different position of the spermathecæ. In *U. corethrura* they lie in somites VIII., IX., X.; in *U. dubia* (Horst) they are found in somites VI., VII., VIII.; in Beddard's specimen from Australia they have the same position as in the present specimen.

Such is a brief sketch of the anatomy of the worm A, from Fernando Noronha; it is sufficient, however, to identify it as belonging to the genus *Urochæta*; but as to the species—whether it belongs to any of those already described or requires a new name—I feel rather diffident of expressing an opinion. In most points it agrees closely with *U. corethrura*; but in the position of the gizzard (in somite VI. instead of VII.), in the position of the spermathecæ, and in the fact that the setæ are not bifid, the two forms differ. On this last point I think no great stress can be laid, as Beddard recognizes no bifidity in his Australian specimen; and I agree with him so far as the present specimen is concerned, which differs also from Horst's species, *U. dubia*, in the position of the spermathecæ; in fact, with regard to these organs, the present and Beddard's specimen are intermediate between Horst's and Perrier's species. But are we justified in establishing a new species on such slender grounds, and from an examination of a single specimen? I think not, and prefer to leave the specimen unnamed, and to regard it as belonging to Perrier's species, of which it may be a variety; for we are at present ignorant as to how far

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* See Perrier, Arch. d. Zool. expér. et gén. iii. 1874.

variation may occur in Earthworms; since with the exception of Beddard's paper on *Perionyx* (Journ. Linn. Soc., Zool. 1886, p. 308), we know absolutely nothing of the subject, and the present specimen forms a step between *U. corethrura* and *U. dubia.*

The two small worms resemble the specimen A in colour and in external characters; the clitellum is, however, undeveloped, so that they are probably young specimens of the same worm.

The worm B is longer than A, and of a somewhat different colour, being of a rather more reddish or violet-brown tint.

The body-wall is transparent, and showed white pyriform sacs through it much more distinctly than is the case with A.

The worm is, however, so soft that no setæ protrude, and I was unable to satisfy myself as to their exact arrangement posteriorly; anteriorly they are paired; posteriorly they are scattered, but whether regularly or not I cannot be positive.

The clitellum occupies somites XIV. to XXIX., and is thus rather more extensive than in A; but the worm is so soft that it is difficult to count with accuracy the somites, as some of the rings may be merely annuli. Thus far, then, we have no indication as to its genus; but on opening it, the arrangement of the septa, seminal reservoirs, and spermathecæ are seen to agree with what is found in A.

This second worm is therefore *Urochæta*, and doubtless the same species as the preceding.

It will be seen that I have made no morphological studies of these worms, nor sought to do more than identify them. Indeed, they were too badly preserved to be of any use histologically, and I should not have felt justified in sectionizing them even if they had been in good condition.

The fact that these worms belong to the genus *Urochæta*, which has been already described from Brazil and some of the neighbouring islands, lends considerable support to Mr. Ridley's supposition that they have been imported from the mainland in the mould in which cultivated plants were brought to the island. In conclusion I must express my best thanks to Mr. Ridley for allowing me to examine and identify them.

PORIFERA.

By H. J. Carter, F.R.S.

Dry Specimens.

These were all too much beach-worn for specific distinction. The Nos. correspond with those on the Specimens.

1. Polytherses, *Duchassaing et Mich.*[*]

2. Hircinia.

3. Chalina.—Spicules fine, slender, acerate.

4. Hircinia.—Fine structure.

5. Euspongia ("best Turkey Sponge" of commerce).

6. Euspongia.—Bearing *Polytrema miniaceum.*

7. Hircinia.—Skeletal structure partially filled with the filaments of *Spongiophaga communis.*

Wet Specimens.

Most of these are too fragmentary for specific distinction, although possessing the natural characters which they presented when taken from their habitat.

8. Polytherses.—Two coarse pieces alone; the rest on pieces of a fine *Hircinia.*

9. Euspongia ("best Turkey Sponge" of commerce").—Three or four discoloured pieces.

10. Chondrilla nucula, *Sdt.*

11. Geodia.—? *G. Tumulosa, Bk.*—Siliceous balls spherical. Zone-spicule trifid; arms simple, undivided, extending upwards, outwards, and lastly horizontally. Bearing *Polytrema.*

12. Chondropsis arenifera, *Cart.* (Ann. & Mag. Nat. Hist. 1886, vol. xvii. p. 122).—Acuate spicules, sometimes blunt at each end.

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[*] It should be remembered that "*Polytherses*" is a *Hercinia* in which the soft parts have been replaced by a structure composed of the filaments of *Spongiophaga communis*, Cart., which is of world-wide occurrence, but of which the nature is still unknown.

13. CHALINA ? species.—Dark, dirty; fragments still bearing traces of their natural red-purple colour. Extending horizontally; throwing up thick ridges; scattered over with short, erect, tubular vents of different lengths. Fibre tough, charged abundantly with comparatively large, acerate spicules. Several pieces, some accompanied by a portion of *Chondropsis arenifera.*

14. EUSPONGIA ("fine Turkey sponge" of commerce).—Typically good, but small specimen; presenting the characteristic, crinkled surface. Colour black above, light sponge-yellow below. Bearing *Polytrema.*

15. CHONDRILLA NUCULA, *Sdt.*—Typically good specimen, growing over sand-detritus mixed with *Polytrema.*

16. CHONDRILLA PHYLLODES, *Sdt.*—Antilles. Spicules of two kinds, viz., pin-like skeletal, and spinispirular flesh-spicule. Closely allied in this respect to *Spirastrella cunctatrix*, Sdt. Colour grey or violet. Consistence gelatinous, firm. Three typically good specimens growing over sand-detritus mixed with *Polytrema* covered with white *Melobesia.*

17. CHONDROPSIS ARENIFERA.—Black on the surface from a layer of brown pigmental cells. Growing over a black *Stelletta* (? species), also bearing a cortical layer of dark brown-black pigmental cells mixed with small stellates. Zone-spicule trifid. Arms simple, straight, extended upwards and outwards.—Four large pieces.

18. CHONDRILLA NUCULA, *Sdt.*—Small, but typically good specimen.

19. SYNASCIDIA.—Common form. Globular, radiated calcareous spicule. Colour purple-white. Two pieces.

20. CHALINA ? species.—Same as No. 13. One piece bearing a bit of *Hircinia.*

21. EUSPONGIA ("best Turkey sponge" of commerce).—Three small pieces.

22. ? ALCYONIUM or HYDROID ZOOPHYTE.—Digitate, reptant; colour yellowish; consistence soft.

23. ACTINIA ? sp.—Now lead-colour.

24. Alcyonium.—Congregated, short, columnar individuals; constricted circularly throughout the column.

25. Euspongia ("Honeycomb sponge" of commerce).—Coarse cavernous structure.

26. Euspongia.—Ditto.

27. Geodia, same as No. 11.—Fragments of skin and body-substance only.

28. Donatia lyncurium.—Four specimens; the largest $\frac{3}{4}$ in. in diameter.

29. Polytherses, with skeletal structure of *Hircinia* protruding.

30. Euspongia ("Honeycomb sponge" of commerce).—Coarse cavernous structure.

31. Suberites massa, *Sdt.*—Spicule of one form only, simply pin-like, with subglobular head. Eight fragments. Surface warty. Colour yellowish.

32. Axinella ? species.—Form of specimen globular, about an inch in diameter, composed of radiating, erect, tough fibre, charged throughout with projecting tufts of simply acuate curved spicules; of one form only.

33. Tethya cranium.—Two small, discoloured, black fragments.

34. Chondropsis arenifera.—Specimen triangular, elongate; 4 inches long. Bearing *Polytrema* and *Melobesia.*

35. Euspongia ("Honeycomb sponge" of commerce).—Coarse, cavernous structure. Three pieces. Colour black above, light sponge-yellow below.

36. Chondropsis arenifera.—Good, but small typical specimen.

37. ? Hymeniacidon sanguinea, *Bk.*—Small insignificant specimen. Spicule of one from only, viz. pin-like and slightly curved. Colour now yellowish.

38. Leuconia sacculata, n. sp. (Calcisponge).—Form of specimen sacculated, consisting of four or more inflations

projecting from a common cavity. Colour white. Entire specimen about an inch long, and $\frac{3}{4}$ of an inch in diameter ($1 \times \frac{3}{4} \times \frac{3}{4}$ inch); broken out on one side, if not the point of attachment. The uppermost or principal division ending in a peristomatous mouth, which can only be seen with a microscope, hence to the unassisted eye looks "naked"; $\frac{2}{12}$ in. in diameter. The same on the summit of each inflation, but reduced to the size of a pin's head. Surface of the body smooth, composed of intercrossing arms of quadriradiate spicules *only*, between which are the pores. Vents as just described, leading into a general cloacal cavity corresponding in its inflations with those of the body. Surface of the cloaca scattered over with holes of very different sizes, very irregularly situated in a layer of minute quadriradiates whose fourth arm is much smaller than the rest, curved towards the oral orifice and projecting plentifully above the surface of the cloaca. The spicules of three kinds, viz. 3-radiate, 4-radiate, and linear cylindrical acerate.

Wall of the body about $\frac{1}{16}$ in. in diameter, composed of three layers of spicules, viz.:—1, consisting of comparatively large quadriradiates whose shaft projects inwards and whose other three arms are spread out horizontally over the surface; arm about $\frac{1}{45}$ by $\frac{1}{300}$ in. in its greatest diameters; 2 (the middle substance of the wall), consisting of 3- and 4-radiates mixed irregularly, whose arms are about the same size as that of the quadriradiates of the first or external layer; 3, or internal layer, forming the surface of the cloaca, and consisting of *minute* or infinitely smaller quadriradiates, whose shafts are directed outwards; the other two arms horizontal, and the fourth, or "spine" as it has been called, which is much the smallest, projecting above the surface in the way mentioned. Peristome consisting of palisading spicules about $\frac{1}{300}$ in. long, very fine and straight with abruptly pointed ends, crossed and kept in position by the spreading arms of the quadriradiates of the third, or cloacal, layer, here much enlarged. Wall permeated by branched canals, which commencing on the pores on the surface end in the holes or apertures on that of the cloaca.

Loc. Island of Fernando Noronha.

39. GEODIA.—Fragments of skin and body-substance. Same as No. 11, &c.

Summary of Specimens, arranged according to the Author's Classification (Ann. Mag. N. H. 1875, vol. xvi. p. 43).

Order I. CARNOSA.

Family GUMMINIA.

CHONDRILLA NUCULA, *Sdt.* 10, 15, 18.
CHONDRILLA PHYLLODES, *Sdt.* 16.

Order II. CERATINA.

None.

Order III. PSAMMONEMATA.

EUSPONGIA ("fine Turkey sponge" of commerce). 5, 6, 9, 14, 21.

EUSPONGIA ("Honeycomb sponge" of commerce). 25, 26, 30, 35.

HIRCINIA. 2, 4, 7.
POLYTHERSES. 1, 8, 29.

Order IV. RHAPHIDONEMATA.

CHALINA. 3, 13, 20.

Order V. ECHINONEMATA.

AXINELLA. 32.

Order VI. HOLORHAPHIDOTA.

HYMENIACIDON SANGUINEA, *Bk.* 37.
SUBERITES MASSA, *Sdt.* 31.
DONATIA LYNCURIUM. 28.
CHONDROPSIS ARENIFERA, *Cart.* 12, 17, 34, 36.
GEODIA, 11, 27, 39.
TETHYA CRANIUM. 33.

Order VII. HEXACTINELLIDA.

None.

Order VIII. CALCAREA.

LEUCONIA SACCULATA, n. sp. 38.

Remarks.

Of the present collection, it may be stated that the facies is West-Indian. *Chondrilla phyllodes*, Sdt., has as yet only been chronicled by that author, and that, too, from the "Antilles" (Grundzüge Spong.-F. atlantisch. Gebietes, p. 26). "*Polytherses*" was the name given by Duchassaing and Michelotti to this transformed, sponge-like body which they dredged in the Caribbean Sea, and whose constituent parts have been above noticed. Both sorts of the Officinal Sponge, viz. the "Best Turkey" and the "Honeycomb" of Commerce, are plentiful, as they are in the West Indies generally. The Calcisponge, *Leuconia sacculata*, is a new species.

MADREPORARIA.

By Prof. P. Martin Duncan, M.B. (Lond.), F.R.S., &c.

Section MADREPORARIA APOROSA.

Family Astræidæ, *Ed. & H.*

Subfamily Astræidæ reptantes.

Astrangia solitaria, *Lesueur*, sp., *Verrill, Bull. Mus. Comp. Zoöl.* No. 3; *Pourtalès*, 1871, *Ill. Cat. Mus. Comp. Zoöl.* p. 79.

A specimen much covered with Nullipores. The corallites smaller than the Florida types, and the so-called "pali" not united before the second and third cycles of septa. The form is allied to *Astrangia Danæ* and to *A. Michelini*. It may be considered as a small variety of the Floridan species.

Subfamily Astræidæ cæspitosæ.

Mussa, sp.—A worn specimen of a species.

Subfamily Astræidæ agglomeratæ fissiparantes.

Favia conferta, *Verrill*, 1867, *Trans. Connect. Acad.* vol. i., *in Hartt's Collection of Corals from the Abrolhos Reef, Brazil*, p. 355 (1868).

This species is remarkable for its elongated calices due to fissiparity, and for their closeness. Often a ridge separates the neighbouring calices, instead of some vestige of interspace and costæ.

Verrill and Pourtalès noticed the alliance of the species with the genera *Goniastræa* and *Mæandrina*. In a small specimen the Goniastroid appearance is striking, and the costæ between the calices are only visible at one spot. There are several rolled specimens, and, as Pourtalès remarked, they resemble Goniastroids very much.

FAVIA ANANAS, *Lamarck*, sp.

The specimens have the usual well-developed columella, the costæ are very visible in one, and the fourth cycle of septa is incomplete.

FAVIA DEFORMATA, *Ed. & H.*, *Hist. Nat. des Corall.* vol. ii. p. 434.

A somewhat worn and broken coral, very Cœlorian in appearance, and with large calices, some long and serial in appearance, but really the result of fissiparity, appears to be a specimen of this form, the habitat of which has hitherto been unknown. The walls are close, but in many places their former separation can be shown. It is a very erratic species, and better specimens are required.

A very worn specimen of the same species was also obtained.

These two specimens came from Rat Island. They were washed up on the south-east corner with a number of Sponges.

Section MADREPORARIA FUNGIDA.

Family PLESIOFUNGIDÆ, *Duncan*.

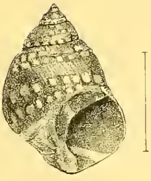
Revision of the Genera of Madreporaria, Journ. Linn. Soc. vol. xviii. 1884, p. 133.

SIDERASTRÆA SIDEREA, *Ellis & Soland.*, sp.

This specimen, and indeed all the rolled ones besides, have smaller calices than the Caribbean type, but that is the only distinction. They greatly resemble *Siderastræa stellata*, Verrill, from the Abrolhos Reef.

Remarks.

This little Coral fauna has the Abrolhos Reef homotaxis, and the species are fairly intermediate between those of the same genera of that reef and of the Caribbean Sea.



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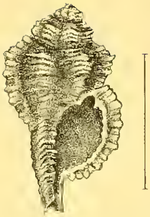

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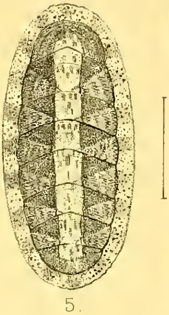

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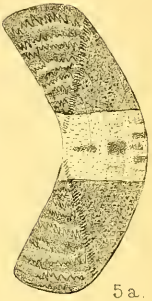

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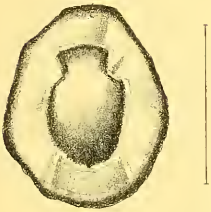

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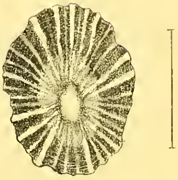

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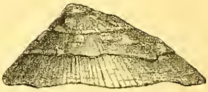

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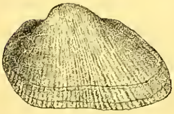

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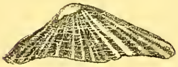

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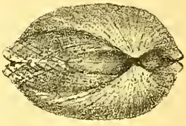

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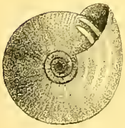

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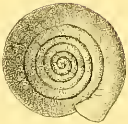

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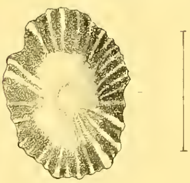

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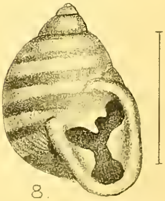

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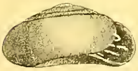

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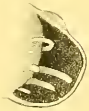

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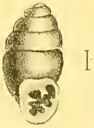

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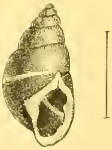

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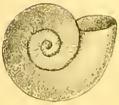

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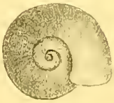

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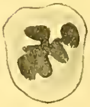
11 b



10 a.

M. Fisher del.

Mintern imp.

MOLLUSCA OF FERNANDO NORONHA.